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Importance and Impact of Diabetes Education on People with Diabetes

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Importance and Impact of Diabetes Education on People with Diabetes

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Contents

Acknowledgments

There are many people to thank who have supported me along this journey of obtaining my master's degree and becoming a nurse practitioner. First and foremost, I want to take a special moment to thank God for always being faithful in giving me the strength, encouragement, and perseverance to keep going. Secondly, none of this would be possible without the help of my loving family, including my husband, parents, grandparents, and precious son. I also could not have done this without my closest friends' support, who have encouraged me every step of the way. Finally, I would like to express my sincere gratitude to Dr. Colleen Marzilli for her patience, guidance, support, and optimism throughout this semester. It has been a blessing to have her as a professor this semester, and I will never forget the acts of kindness that she shared.

Importance and Impact of Diabetes Education on People with Diabetes

Diabetes mellitus is a worldwide and chronic disease that substantially impacts the economy and healthcare systems (Aquino et al., 2017). Diabetes is said to be one of the most prevalent diseases worldwide (Cruz-Cobo & Santi-Cano, 2019). Ninety percent of all diabetic patients are type 2 diabetics, and the number of diagnosed patients continues to increase yearly due to poor nutrition and inactive lifestyle (World Health Organization [WHO] 2013). With the suggested change, hemoglobin A1Cs will be lower. An efficient and effective standardized diabetes education will be implemented with the evidence-based research gathered to produce positive wellness behavior toward patients with their diabetes diagnosis. The PICOT for the proposed change is: 'In diabetic patients (P), how does standardized diabetic education (I) compared to no education (C) affect diabetics' hemoglobin A1C (O1) and wellness behavior (O2) within three months (T)? Executing standardized diabetes education to improve hemoglobin A1C and wellness behavior is crucial for patients with diabetes and our economy.

Rationale

Diabetes affects people from various socioeconomic cultures and negatively impacts economic expenses and social, physical, and psychological well-being (Lawal et al., 2018). In addition, in 2015, the estimated global cost of diabetes in the United States was $1.31 trillion (Bommer et al., 2015). In 2015, it cost $673 billion internationally to treat diabetes and its complications; by 2040 is expected to increase to $802 billion (Herman, 2016). Diabetes education programs enhance insight into diabetes, promote healthy lifestyles, and reduce complications and hospital admissions (Davies et al., 2008; Rygg et a., 2012).

Long-term complications can occur in individuals with diabetes and present severe risks to health and quality of life and significant financial burdens on patients and their families (Wei

et al., 2018). Healthcare expenses for people with diabetes are 2.3 times more than for non-diabetics (Powers et al., 2020). The consequences of not implementing change for this chronic disease will result in continued elevated hemoglobin A1C (HbA1C), which is associated with an increased risk of diabetes-related mortality and morbidity (Almutairi et al., 2019).

Literature Synthesis

McCay et al. (2019). Cruz-Cobo and Santi-Cano (2019) and Hildebrand et al. (2019) generated systematic reviews that each evaluated the efficacy of diabetes education. Though each study reviewed different indicators for determining effectiveness, it was concluded in all three studies that diabetes education is necessary to yield progressive outcomes. These indicators included changing participant cognitions and behaviors, metabolic control, body mass index (BMI), blood pressure, and HbA1C. McCay et al. (2019) decided that HbA1C should not be the only value measured to determine the success of glycemic control but also behavior and psychosocial measures needed to be included. Cruz-Cobo and Santi-Cano (2019) determined that individual education provided the most significant reduction in HbA1C. Still, group education was the most effective intervention in reducing BMI, blood pressure, total cholesterol, triglycerides, and LDL cholesterol. Hildebrand et al. (2019) focused on the effectiveness of diabetes self-management education in reducing HbA1C in Latino adults with type 2 diabetes. This meta-analysis concluded that culturally individualized education profoundly reduced HbA1C.

Similarly, Surucu et al. (2017) and Castillo-Hernandez et al. (2020) designed randomized controlled trials (RCT) to investigate the effects of diabetes education. Surucu et al. (2017) used a self-care deficit nursing theory (SCDNT) to determine the results of diabetes education on self-care agency, self-care activities, and HbA1C levels of type 2 diabetics. It was concluded that

self-care agencies, self-care activities, and glycemic control were improved based on the SCDNT-based diabetes self-management education.

Castillo-Hernandez et al. (2020) developed an RCT that added peer support to a diabetes education program to evaluate the effect of glycemic control and quality of life compared to traditional diabetes education programs. It was concluded that peer support and diabetes self-management education showed improvements in the behaviors of those with diabetes and their glycemic control, quality of life, and attendance to education programs.

Coningsby et al. (2022) developed a qualitative study that discovered why adults with type 2 diabetes do not attend diabetes self-management education. Two main themes were identified for nonattendance and expressed those individualized approaches should be taken to understand people's thoughts, needs, and capabilities concerning their diabetes.

In summary, the recommendation for change includes ensuring that all patients diagnosed with diabetes are provided with patient-centered education to promote adequate glycemic control and appropriate wellness behavior with their disease.

Project Stakeholders

Interprofessional involvement plays a vital role in the achievement of the proposed change. Stakeholders include patients, internists, nurses, diabetic educators, nurse managers, and wellness coaches. The internist is responsible for routinely managing and treating a patient's diabetes. The internist and nurse will collaborate to schedule referrals to educators and wellness coaches appropriately. Nurses are essential advocates and will provide support and education regarding the proposed change. The diabetic educator will educate the interprofessional team regarding the pathophysiology of diabetes and the comprehensive plan. The manager will ensure patients are scheduled appropriately with the educator and wellness coach following physician

visits. The wellness coach will provide information regarding training and healthy lifestyle habits to ensure tremendous success for diabetic patients.

Implementation Plan

The site where the change implementation will occur is an outpatient internal medicine clinic. Often, newly diagnosed diabetics are treated by their primary care physician without immediate referral to an endocrinologist.

Necessary data to build a case for change includes a select group of patients diagnosed with type 2 diabetes and a recent record of their HbA1C. A current history of vital signs, including weight and BMI, can also be used to evaluate the effectiveness of the proposed change. Additionally, asking the participants their perceptions regarding their diabetes can also be helpful. With the data collected, we can compare the HbA1C, vital signs, weight, BMI, and cognitive attitudes of those patients with diabetes that were not selected to validate the necessity of the change implementation.

Permission from the Chief Executive Officer (CEO), internist, and patients will be needed to implement the proposed change. Nurses and medical assistants who work directly with the physician are considered allies who will play a significant role in the project. It is essential to be prepared and anticipate barriers that may occur. Such barriers could include the CEO denying access to the clinic site, the internist refusing to participate, and the patient's lack of knowledge regarding commitments for required follow-up visits. Preparation will help eliminate or minimize potential barriers. Anticipate what probable questions may be asked and be prepared to answer confidently by providing instruction regarding how the proposed change can positively impact patients and the clinic site.

Resources needed to enact change include personnel staff (nurses and medical assistants), physicians, phlebotomists, electronic health records (EHR), and patient education materials. Training on navigating EHR will be necessary. The physician and nurses will assist with the change project implementation.

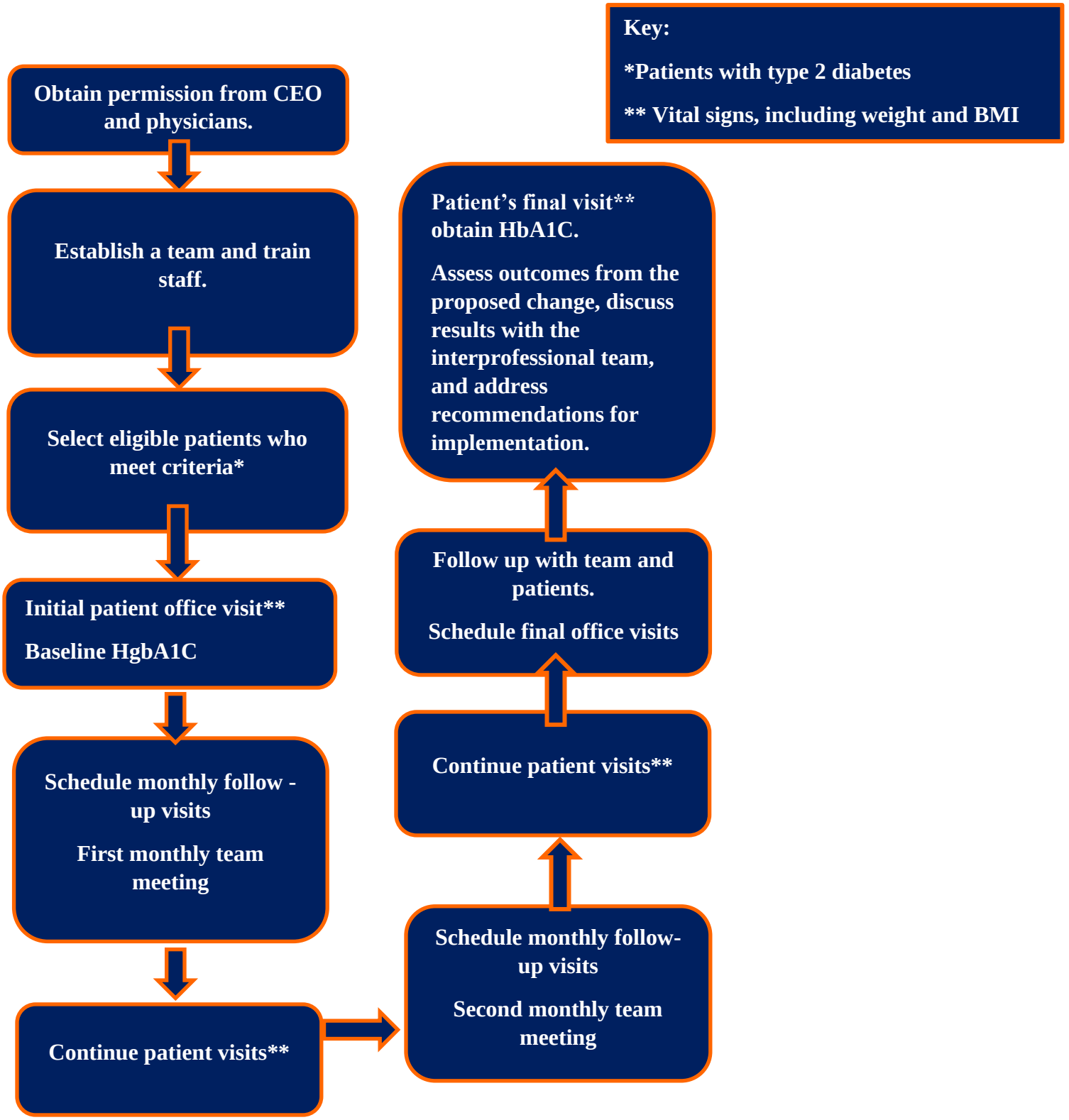
Timetable/Flowchart

To execute a successful change, developing a strategic plan and engaging all included staff directly affected by the proposed change is necessary (Melnyk & Fineout-Overholt, 2019, p. 274). The team must agree to the plan, select patients, and collect data using an EHR. The specific timeline for project implementation:

- Week 1: Obtain permission from the CEO and internists.
- Week 2: Establish a team and train the staff on the change project.
- Week 3: Select eligible patients who meet the criteria (Type 2 diabetes)
- Week 4: Initial patient office visit where they will be given specific diet, exercise, medication management instructions, and educational materials. Vital signs, including weight and BMI, will be recorded. Baseline HbA1C will also be obtained.
- Week 5: Schedule monthly follow-up visits to evaluate patients' progress and diet and exercise regimens. First monthly team meeting to discuss the process and the need for recommendations for the upcoming month.
- Week 6-7: Continue patient visits and check in with the team to determine how the project is going.
- Week 8: Second monthly team meeting to discuss the process and the need for recommendations for the final month. Second patient office visit. Vital signs, including weight and BMI, will be recorded.

- Week 9-11: Follow up with team and patients. Schedule final office visits.
- Week 12: Patient's final visit: Record last vital signs, including weight and BMI, and obtain HbA1C. Assess outcomes from the proposed change, discuss results with the interprofessional team, and address recommendations for implementation.

Flow Chart



Data Collection Methods

The following data will be needed to reflect outcomes to determine the successfulness of the change: discussions with the team to gather their professional opinion regarding how the process went during the three months and recommendations. Also, patient surveys will be beneficial in evaluating their results and overall satisfaction. Additional information, including records of vital signs, weights, BMI, and HbA1C, will be needed to determine the effectiveness of the change. A flowchart will be conducted to evaluate the change process with data indicated and provided to the team. Additional evidence-based education regarding the diabetes disease process can be delivered to team members to aid in the treatment plan of diabetic patients if a change cannot be enacted.

Cost/Benefit Discussion

Costs associated with implementing this change include the addition of a diabetes educator. Integrating a diabetes educator will enhance patient quality of life outcomes and help physicians provide comprehensive and prompt clinical care (Grohman et al., 2017). With the proposed change and use of standardized education for all diabetic patients, the exponential expenses of diabetes and its impact on the economy can be reduced.

Conclusion

Due to the continuing prevalence, an increased burden is placed on individuals with type 2 diabetes, their families, and healthcare systems (Akhter et al., 2017). Change is warranted to lower HbA1C, promote healthier lifestyles to decrease the risk of morbidity and mortality, improve patients' knowledge of their diagnosis, and ultimately reduce the financial demands on people with diabetes and the economy. The proposed change can be achieved with an operational inter-professional team committed to collaboratively communicating, working, and accessing

data needed to support the evidence-based change. Unfortunately, this project had to be a benchmark due to COVID restrictions at my clinical site and unemployment. Diabetes is something that I am incredibly passionate about, and I look forward to hopefully being able to implement this project into place after I start practicing as a family nurse practitioner. This diagnosis will only get increasingly more prevalent each year, and it is vital as providers to ensure that our patients with diabetes are receiving the education they need and deserve to have a more meaningful life.

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Appendix A

Evaluation Table

Clinical Question (PICOT):

Intervention:

In diabetic patients (P), how does standardized diabetic education (I) compared to no education (C) affect diabetics' hemoglobin A1C (O1) and wellness behavior (O2) within 3 months (T)?

Citation: Author, Date of Publ. & Title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Worth to Practice: LOE Strengths/Weaknesses Feasibility Conclusion RECOMMENDATION
(Study #1) McKay (2018). Structured diabetes education outcomes: looking beyond HbA1c. A systematic review.	Review indicators of DM ed. efficacy.	None	SR A SS of MEDLINE, EMBASE, PsycINFO, CINAHL and Scopus databases.	N = 6747 Mean age = 47-67 Gender = M/F	IV1: DM ed; DV1: QOL DV2: A1C	Change in A1c; change in BMI and body wt.	Statistical analysis	HgbA1C - ↓ 0.9% at 3 mo., 0.3% ↓ after 4 wks of ed.	Level I Evidence Strengths: Able to prove that group education is most effective method in positive behavioral and psychosocial outcomes. Future SDE education and improvements on GC with behavioral and psychosocial change. Weaknesses: Lack of inclusion w/ the CG. Lack of consensus in relation to appropriate behavioral and psychosocial

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									measures of SDE. Lack of longitudinal studies. Recommendations: More specific timeframe such as over 3-months instead of duration of from ≤6 months through to ≥1 year. [1]
(Study #2) Castillo-Hernandez PhD (2020). Peer Support Added to Diabetes Education Improves Metabolic Control and Quality of Life in Mayan Adults Living	Eval. the effect of PS added to DM edu. Prog. On GC and DM related QOL c/w conventional DM edu. program in pt.'s with T2D in a Mayan comm. in Mexico.	None	RCT. with 2 parallel groups.	16 wk DSME program N = 58 2 groups = PSEG and DSME	IV1: Peer support. IV2: Comparison DV1: DM SM behaviors, DV2: DM Control D3: DM related quality of life. D4: Changes in SBP/DBP. D5: BMI/ht.	A1C - high-performance liquid chromatography QOL - Diabetes-related QOL Questionnaire. SBP/DBP – Auto. Bp monitor. BMI/Ht. – balance/stadiometer.	Statistical analysis	A1C - 4 mo: PSEG 0.83% vs EG 0.44% [p=0.2]; 8 months: PSEG 1.29% vs EG 0.98% [p=0.3]) SBP & DBP ↓ at 4 mo in PSEG, ↑ in EG PSEG ↑ DM related	Level II Evidence Strengths: Demonstrated the benefits of PS edu. above and beyond the impact of DSM edu. on DM-related QOL in an underserved Mayan community in Mexico. Weaknesses: Only 58 part. were recruited. Recommendation: Larger sample of part. To

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With Type 2 Diabetes: A Randomized Controlled Trial.								QOL at 8 mos.	conduct study on.
(Study #3) Conings by (2022). A qualitative study exploring the barriers to attending structured education programmes among adults with	Explored reasons for NA to DSME among adults with T2D using ABM as framework.	None	Qualitative Study Semi-structured interviews.	N=14 5 women / 9 men. Aged b/ween 27 and 80 years (M=57, SD=15.5) Convenience sampling: Over 18 y/o Live in Bath and NE Soerset, UK Dx'd w/ T2D Verbally declined	IV: Reasons for NA to DSME DV: Explain NA.	Andersen's Behavioral Model of Health Service Utilization (ABM).	Reflexive thematic analysis	Two main themes exp. NA were identified.	Level II Evidence Strength: Use of ABM as well-supported model to reveal barriers to attending DSME. Weakness: Part. Were recruited and invited via telephone w/out awareness of some part. Negative views towards their dx. Such

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type 2 diabetes.				invite to attend DSME program, X-PERT w/in last 2 years.					views are not fully apprehended in this study and may have also been a barrier to attendance. Recommendation: Lack of education proved to be the greatest obstacle and challenge for the party. This helped prove to me the importance of adequate communication and education between pt.'s and their providers.
(Study #4) Surucu (2017). The Impacts of Diabetes Education on Self Care Agency, Self-Care Activities and HbA1C	Investigate effects of SCDNT.	None	RCT – Dbl blind, randomized, controlled int. Study.	Sample size -139 IG – 70 CG – 69 p > 0.05	IV: SCDNT DV1: self-care act. DV2: self-care agency DV2: HgbA1C	SCAC – Scale composed of 35 items. r <0.20 DSCAQ – self-reported measure of freq of DM self-care tasks consist. Of 11 items HgbA1C – coll. By	Statistical analysis	No sig. diff. bween IG and CG – self-care agency (t:-0.571; p: .569) self-care act. (t= -1.604; p= .111), HgbA1	Level II Evidence: Strengths: This study is a double blind, randomized, controlled int. study. Results support hypothesis of study. Weakness: Pt. invited via tel. F/u for HgbA1c done via tel. Long-term

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Levels of Patients with Type 2 Diabetes: A Randomized Control Study						interviewers via tel.		C (t= .497; p = .620)	outcomes of DSME based on SCDNT were not studied. Pt.'s only recruited from one DM ed.center. Recommendation: To make the results more evident, pt.'s from other diabetes centers or other parts of the country could be utilized. I person communication may also prevent follow up loss and also may help improve sample size.
(Study #5) Cruz-Cobo (2019) Efficacy of Diabetes Education in Adults With Diabetes Mellitus Type 2 in Primary	To analyze the effect of different DM ed. Methods on metabolic control, BMI and BP.	None	SR – in accordance w/ PRISMA guidelines for SR.	N = 18 IG, N=3,250 CG, N=3,352 Gender = M/F	IV: DM ed. DV1: HgbA1C DV2: BMI DV3: SBP DV4: DBP	HgbA1C BMI SBP DBP Biochemial and anthropometric parameters were analyzed for outcome variables. Statistical heterogeneity using	Statistical analysis	Most profound HgbA1C ↓ was achieved by using individual ed. To ↓ BMI, SBP, DBP, TC, LDL,	Level I Evidence: Strengths: This SR was able to describe the different methods and procedures used in DM ed. to analyze which approaches have better results. Also was able to analyze

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Care: A Systemic Review						chi-square test.		AND Triglycerides, group ed. was most eff. Int.	effectiveness of DM ed. given. Weaknesses: Search of grey lit. in area was not completed. Bias in SR due to selection criteria being studies published in English or Spanish. Blinding of education providers not feasible when conducting clinical trials on BM ed. Recommendations: Large sample size to further prove hypothesis. Being able to monitor if improvements and changes obtained were maintained over time or would repeat interventions or reinforcement need to be made.
(Study #6)	Evaluated effectiveness of	None	SR and Meta-	N = 23 studies Exclusively adult	IV1: DSME	Data extraction tool was utilized to	Statistical Analysis	Pooled est. effect of	Level I Evidence: Strengths:

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Hildebrand (2019) Effect of diabetes self-management education on glycemic control in Latino adults with type 2 diabetes: A systematic review and meta-analysis	DSME in reducing HbgA1C in adult Latinos w/ T2D Test whether structured personal care, compared to routine	None	analysis SS conducted of Medline, CINAHL, PsycINFO, Cochrane Library and Web of Science	Latinos w/ T2D Sample size 3540 participants 1381 pt.'s Newly dx'd T2DM Age: 40 y/o or older 99.1% western	DV1: HbgA1C IV1: Socio-demographic determinants DV1: Structured personalized	coll. Author, year of publication, study design, baseline, & final sample size, duration and overall retention. Cochrane risk of bias tool was utilized to assess the methodological quality of studies Random-effects model was utilized to estimate effect size of DSME on A1C due to moderate heterogeneity bween studies	Statistical analysis	DSME on A1C was -0.240 (95% CI = -0.345, -0.135, p < 0.001) Structured personal care ↓ r/o any DM	Able to prove that culturally tailored DSME programs reduce A1C levels in adult Latinos. Weaknesses: Limited number of RCT's that met requirement for exclusively Latino participants. Only peer-reviewed & published articles were included. Recommendations: Evaluate grey literature and unpublished work or dissertations. Also, consider other factors such as setting of intervention and specificity of interventionist.

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(Study #7) Heltberg (2017) Socio-demographic determinants and effect of structured personal diabetes care: a 19-year follow-up of the randomized controlled study diabetes Care in General Practice (DCGP)	care, for pts newly diagnosed with T2DM, reduced the incidence of seven pre-defined outcomes, including all-cause mortality and any DM-related outcome		Cluster-RCT	Europena descent	diabetes care	Body weight, BP, urinary albumin, HgbA1C, total cholesterol, fasting triglycerides, and serum creatine. Smoking & physical activity, attitudes towards disease		related endpoint and effect of int. was modified by geographical area (interaction p=0.034) with hr of 0.71 (95% CI: 0.60-0.85) and 1.07 (95%CI: 0.77-1.48) for pt.'s in urban and rural areas	Level II Evidence Strengths: Reported hard endpoints after 19 years of follow-up. Weaknesses: Study was population based, with no upper age limit. Recommendations: At the 6-year clinical follow-up, be able to describe a sig. difference b/ween rural and urban pts.

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(Study #8) Almutairi (2019) The effectiveness of patient activation intervention on type 2 diabetes mellitus glycemic control and self-management behaviors: A systematic review of RCTs	Assess effectiveness of pt. activation intervention on T2DM glycemic control and SMBs	None	SR of RCTs	N = 10 studies Total sample size 3728 (mean 372 and range 60-711 part.) Middle aged adults	IV1: Patient activation intervention DV1: Glycemic control DV2: Self-management behaviors	PRISMA Guideline Physical activity & diet	Statistical analysis	Sig. improvement in int. group, 71% for physical activity ($p<0.05$) and 85% for diet ($p<0.05$). Glucose self-monitoring improved in int. group ($p < 0.02$)	Level I Evidence Strengths: All included studies were RCTs. Smple size was > 120 participants. Minimum duration of f/u was 12 months. Weaknesses: Because only English language studies were included, there was a possibility of publication bias, and while five databases were used to discover all relevant studies, some studies may have needed to be included. Recommendations: The study settings and intervention methodologies, delivery modes, length

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									of intervention, and the number of providers varied. This variation can make comparing studies challenging therefore I recommend adjusting these variances.
(Study #9) Wei (2018) Design and implementation of an Omaha System-based integrated nursing management model for patients with newly-diagnosed diabetes	Investigate the effect of integrated nursing mgmt model on blood sugar levels, qol, and DM knowledge in pt.'s w/ newly dx T2DM.	None	RCT	Intervention group n=183. Control group n=184 358 participants w/ a mean age of 50.1 ± 9.1 years Newly dx'd w/ T2DM Age 18-70 y/o	IV1: Integrated nursing mgmt. model DV1: Blood glucose levels DV2: QOL DV3: DM knowledge	Audit of DM Knowledge (ADKnowl) and DM specificity QOL scale	Statistical analysis	At 6 mo., blood glucose levels, qol, and dm knowledge in int. group were sig. superior to those in con. Group (all P <).	Level II Evidence Strengths: The Omaha problem classification system, used in the integrated nursing mgmt model, can describe the majority of s/s that may occur in patients who receive follow-up visits. Weaknesses: health-related behavioral disorders accounted for most of the difficulties identified d/t being newly dx'd

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									Recommendations: Include pt.'s who weren't just newly dx w/ T2DM.
(Study #10) Akhter (2017) Empowerment-based education for established type 2 diabetes in rural England	determine if adopting the 'empowerment' approach is an acceptable method of DM ed. for those pts with established T2DM in England	None	RCT	Established T2DM	IV1: Empowerment-based diabetes education DV1: Increase in knowledge regarding diabetes	RDKS	Statistical	Those taking insulin ↑ proportion of correct knowledge by 5, while others ↑ theirs by 10. Total of 93.5% said session met their expectations.	Level II Evidence Strengths: Able to conclude that a 3.5-hour DM ed. session following the US 'empowerment' approach, is associated with an increase in knowledge and is well accepted and appreciated by the participants Weaknesses: Low participation rate and participants that are on insulin which proved that they're more knowledgeable than those who are not. Recommendations: Higher participation rate and only include patients who are not on

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									insulin. Question familiarity may be reflected by repeating a questionnaire. Also, by providing topics that are more expansive to determine the degree of learning by participants.
(Study #11) Lawal (2018) Barriers to structured diabetes education attendance: Opinions of people with diabetes	Explore barriers associated with NA at DM ed. sessions in UK.	None	Qualitative	N=24 participants Age – 40 y/o and older Mean age – 52.9 Mean time since dx – 1.2 years Ethnic backgrounds – 12 Caucasian (50%), 8 Asian (33%), and 4 African/Caribbean (17%).	IV1: Reasons for NA at DM ed. sessions DV1: Explain NA	Semi-structured interviews Investigator conducted 1:1 interviews via telephone	Thematic	3 themes for NA were identified.	Level II Evidence Strengths: Saturation was achieved when no additional obstacles emerged. Weaknesses: The study's use of the convenience sample technique was a significant shortcoming. To address this, the study's population was drawn from four distinct geographical areas, each with its own demographic

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									features. Low participation rates. Recommendations: Having a larger participation rate, it would help solidify the results from this study.
(Study #12) Aquino (2017) Effectiveness of individual strategies for the empowerment of patients with diabetes mellitus: A systematic review with meta-analysis	Identify and assess the efficacy of individual empowerment initiatives in DM pts.	None	SR w/ MA PRISMA Statement Guideline	N=11 studies	IV1: Individual empowerment strategies DV1: HgbA1C DV2: Diabetes empowerment scale	RevMan V 5.2 software DM Empowerment Scale Problem areas in DM scale	Statistical analysis Meta analysis	Individual DM empowerment techniques were not successful in ↓ HgbA1C but presents psychosocial benefits	Level I Evidence Strengths: PRISMA-compliant data collecting process. No restrictions on publication date or language of articles. Weaknesses: The search approach ensures that only some publications have been included. Second, bias in the literature is possible due to the inclusion of only published controlled clinical trials.

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									Recommendation: More studies need to be inclusion criteria. Individual techniques must be addressed in order to become effective in DM mgmt..

Legend: acc. – according, add. – additional, app. – applying, B&P – behavioral and psychosocial outcomes, bween – between, BMI – body mass index, BOR – borough of residence, BP – blood pressure, CINAHL – Cumulative Index to Nursing and Allied Health Literature, CG – control group, coll. – collected, comm. – community, com. – complete, c/w – compared with, con. – continents, consist – consisting, DBP – diastolic blood pressure, DSCAQ – Diabetes self-care activities questionnaire, dbl – double, dec. – decreased, del. – delivered, DSME – diabetes self-management education, DV – dependent variable, det. – determine, DM – diabetes, DSM – diabetes self-management, dx – diagnosis, diff – difference, dur. – duration, eff. – effective, ed. – education, eval. – evaluate, exp. – explaining, fam. – familiarization, f/b – followed by, freq – frequency, f/u – follow up, GC – glycemic control, HgbA1C – Hemoglobin A1C, HT – height, iden. – identification, IG – intervention group imp. – improvement, inc. – included, int. – intervention, inv. – involved, IV – independent variable, M/F – male/female, mgmt. -management, mo-months, NA – non-attendance, part. – participant, pos. – positive, PRISMA – Preferred Reporting Items for Systemic Reviews and Meta-Analyses, PS – peer support, pt. – patient, QOL – quality of life, red. – reduction, rep. – reported/reporting, req. – required, SBP – systolic blood pressure, SCAC – self-care agency scale, SCDNT – self-care deficit nursing theory, SDE – structured diabetes education, sig. – significant, SR – systemic review, SS – systemic search, stat. – statistical, T2D – type 2 diabetes, tel – telephone, TC – total cholesterol, TF – thematic framework, w/ - with, w/in – within, wks – weeks, wt. – weight.

Appendix B

Flow Chart