Effectiveness of Educational Intervention on Diabetic Knowledge & HbA1c on Kenyan Adults With T2DM

Sabina Jeruto Bett DNP, FNP-BC
Jochebed Ade-Oshifogun, PhD, RN-BC, CNE

Background & Purpose

- Educational gap in diabetic knowledge
- Low community diabetic knowledge across Kenya (Jones, 2013)
- Diabetes led to the deaths of 1.6 million people in 2015 (WHO, 2014) and 438.4 million adults in the world will have T2DM and Sub-Saharan Africa will increase 98% (Mbanya et al., 2010).
- This project was designed to bring awareness of diabetes complications and how to manage using lifestyle changes such as a healthy diet.

Purpose Statement

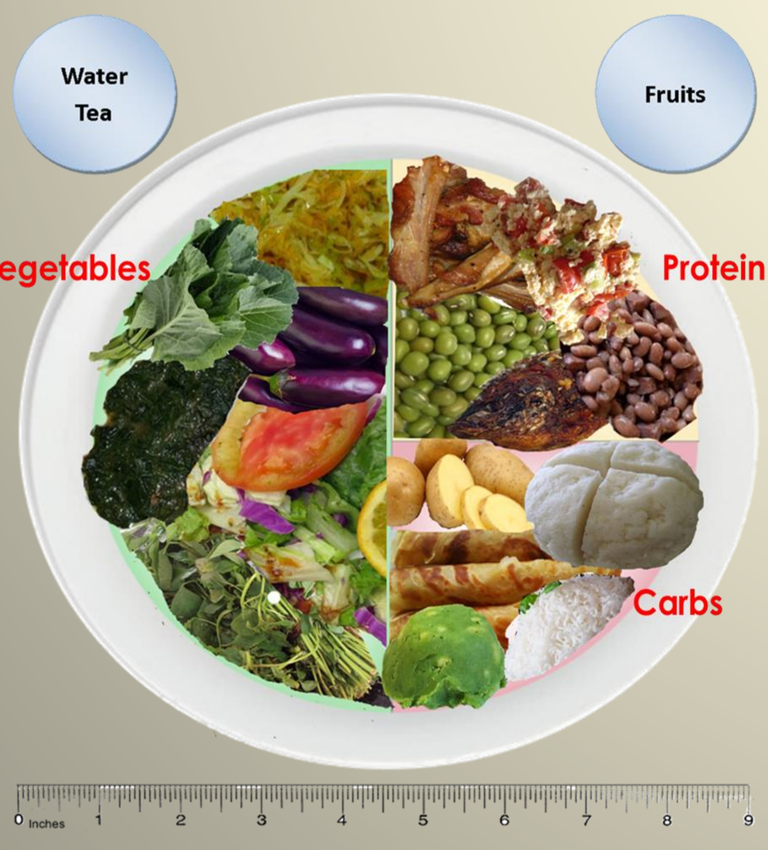
- To study the effectiveness of diabetes educational intervention on:
  - Diabetic knowledge
  - Self-efficacy
  - Glycosylated hemoglobin A1c (HbA1c)

Project Questions

- Does a structured educational intervention increase diabetic knowledge in patients with T2DM…
  a. Increase levels of diabetic knowledge?
  b. improve participants' self-efficacy?
  c. reduce HbA1c levels?

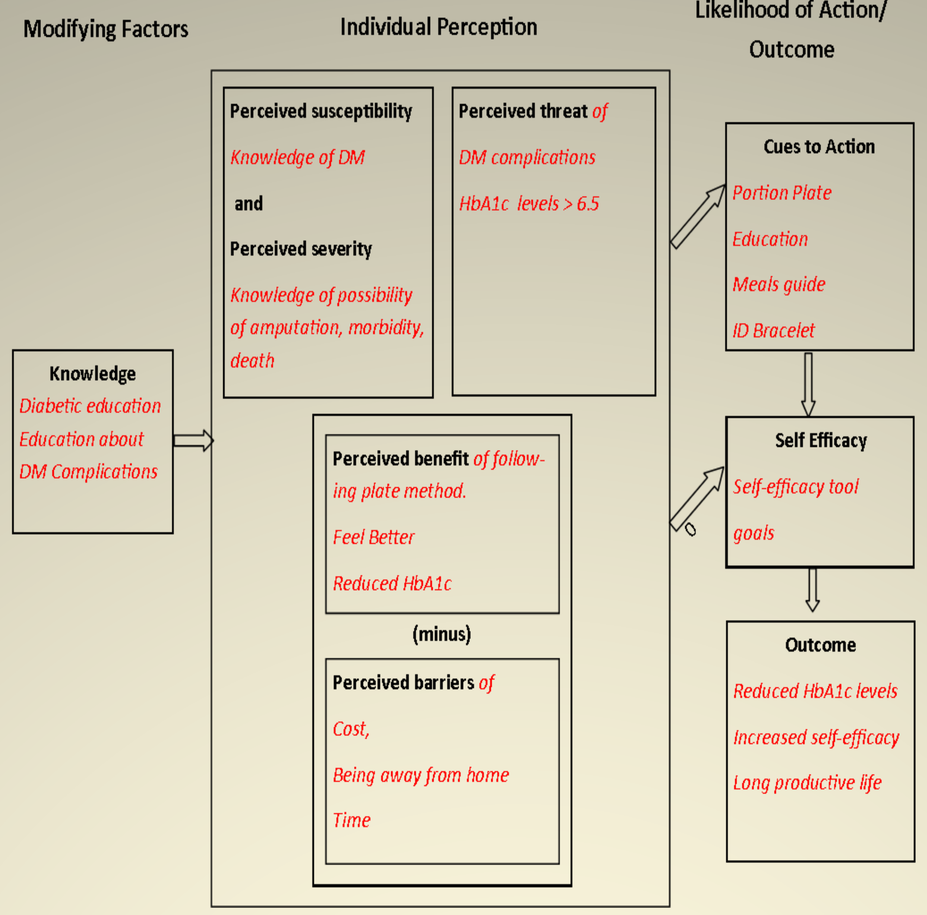
Conceptual Framework

- Diabetic knowledge: knowledge of diabetes, significance of HbA1c testing, and meal planning using The Plate Method
- Self-efficacy: Confidence in knowledge of how to use the plate method
- HbA1c: Average blood sugar level in the last 3 months.
- HbA1c ≥ 6.5% indicated T2DM in the project



The Plate Model

Health Belief Model



Methods

- Experimental design over four-month period in an urban-rural hospital in Eldoret Kenya
- Institutional Review Board (Ethics Committee's) approvals obtained from Reale Hospital , Andrews University IRB, University of Eastern Africa REC, NACOSTI, County Government
- Convenience systematic sampling
- Recruited 143(experimental=72 and control =71)
- Independent variable - Structured diabetes education
- Dependent variable- Diabetic knowledge, Self-efficacy, HbA1c
- Data Analysis: Descriptive, ANOVA, Independent sample t-tests, Paired sample t-tests

Intervention

- Three 120-minute educational sessions.
- Each session offered for one week

Education session 1:
- General introduction to diabetes
- HbA1c lab collection
- Diabetes medication and interventions
- Goal setting and barriers to goal achievement

Educational Session 2:
- T2DM management through educational intervention
- Food label reading, nutrient calculation, food sampling using The Plate model
- Benefits of diet education and intervention

Educational Session 3:
- Coping with T2DM with family support
- Analysis of perceived benefits minus perceived barriers
- Development of cues of action and goal setting

Results

Mean differences of Pre and Post measures of HbA1c, Self-efficacy and diabetes knowledge for Both Groups and comparison between groups

Variable	Control (n=60)		Experimental (n=63)		Statistics t –test, df, F
	M	SD	M	SD	
Pre-Post HbA1c Mean Difference	-0.02	2.17	1.23	2.22	$F_{(1, 121)}$= 9.989, p=0.002*
Pre-Post Self-efficacy Mean Difference	0.2695	2.03020	1.5751	1.71477	$F_{(1, 117)}$= 14.342, df=117, p=<0.001*
Pre-Post Diabetes Knowledge mean Difference	0.62*	2.513	6.11	3.848	t=9.286, df=107.820, p<0.001

*P values are significant

	Control		Experimental	
Project question: Does diabetes education;	Pre	Post	Pre	Post
Increase diabetic knowledge = Participants that scored 80% or more post intervention	6.70%	15.00%	7.90%	61.90%
Increase self efficacy = Participants that scored 7 or more post intervention	30.00%	40.00%	34.90%	79.40%
Reduce HbA1c = Mean HbA1c levels of groups	9.11%	9.13%	9.30%	8.07%

Discussion

- Education is the key ingredient in glycemic control among T2DM patients
- Knowledge of influence of food on body increased understanding of benefits of balanced diet.
- Knowledge instilled understanding that they were responsible and capable of controlling HbA1c levels.
- Healthcare practitioners should be involved in providing meaningful and culture specific information.
- Government should be involved in subsidizing cost of HbA1c testing.
- Community education should be promoted to ensure collaboration of teaching.

Projects Strengths and Impact

- Project was novel in Kenya and generated significant interest in stakeholders
- Project lead interviewed in local TV station
- Request by local government for conference in the region to present findings
- Subsidizing of HbA1c costs by hospital
- Follow-up one-day seminars conducted for two weeks after completion of project

Conclusion

- Educational intervention is the most significant strategies of managing T2DM among Kenyans with T2DM.
- There is need to educate on the significance of HbA1c testing and control
- Culture specific structured diabetic education helps eliminate negative individual perceptions.

References

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