



**VCU** School of Pharmacy

# Assessment of a Diabetes Prevention Program using the Theoretical Domains Framework: A Qualitative Analysis

Teresa M. Salgado, MPharm, PhD

Assistant Professor

Department of Pharmacotherapy & Outcomes Science

Co-Director, Center for Pharmacy Practice Innovation

VCU School of Pharmacy

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# OUTLINE

1. Introduction to Diabetes Prevention Program at VCU
2. Impetus for the study
3. Aim
4. Methods
5. Results
6. Conclusion

# Diabetes Prevention Program at VCU

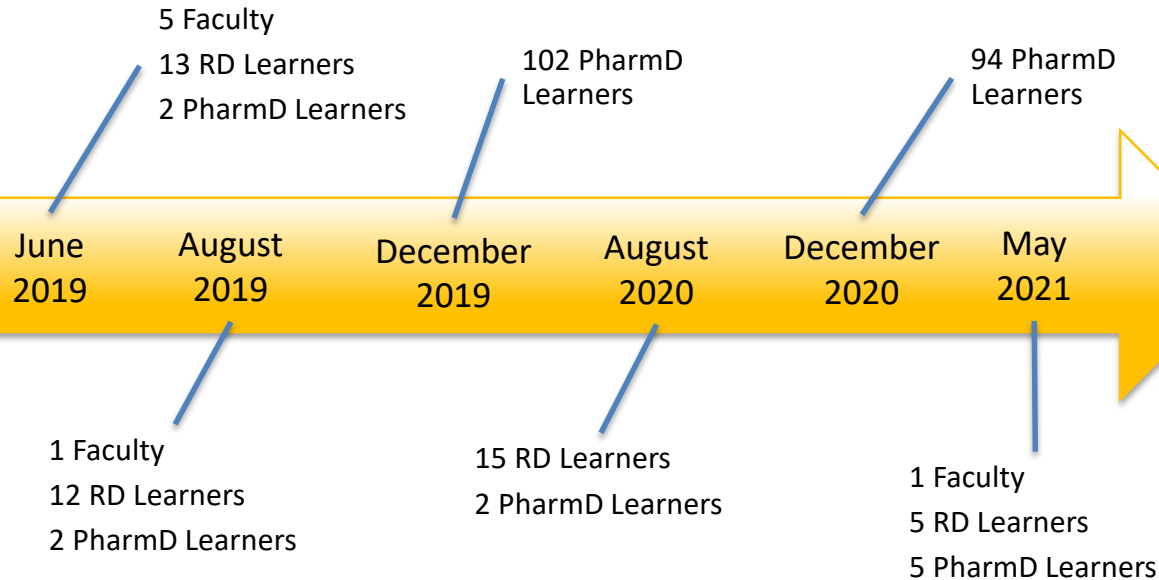
VCU Health Hub



VCU Stony Point



# Diabetes Prevention Program at VCU



6 Cohorts (2 virtual)  
81 Participants  
Average Weight Loss

- 6 lbs at 6 months
- 6 lbs at 12 months

Total 276 Pounds Lost!

259 DPP Lifestyle Coaches Trained 2019-2021

# Diabetes Prevention Program at VCU

## Creating a virtual DPP

Let's Practice the Talk Test!

▶ Activity: March in place for 2 minutes



June 22, 2020

January 11, 2021



Personal Lifestyle Coach

- P1-P3 pharmacy students
- Provide mid-week support
- Promote goal achievement
- Increase session attendance

# IMPETUS FOR THE STUDY



Understand how the program is going from the participants' perspectives to inform future adaptation and improvements



Low participation from residents in the East end of Richmond (Health Hub)  
→ need for **participant-informed recruitment strategies**



Retention in the program is challenging  
→ need for **participant-informed retention strategies**

# AIMS

1. Explore participants' perceptions of the DPP offered at VCU and assess implementation of patient behavior changes in light of the **Theoretical Domains Framework**.
2. Understand factors that lead to **attrition** of the program and what **recruitment strategies** could be used to increase participation among underserved communities.

# THEORETICAL DOMAINS FRAMEWORK

Atkins et al. *Implementation Science* (2017) 12:77  
DOI 10.1186/s13012-017-0605-9

Implementation Science

METHODOLOGY

Open Access



A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems

Lou Atkins<sup>1\*</sup>, Jill Francis<sup>2,3</sup>, Rafat Islam<sup>3</sup>, Denise O'Connor<sup>4</sup>, Andrea Patey<sup>3</sup>, Noah Ivers<sup>5</sup>, Robbie Foy<sup>6</sup>, Eilidh M. Duncan<sup>7</sup>, Heather Colquhoun<sup>8</sup>, Jeremy M. Grimshaw<sup>3,9</sup>, Rebecca Lawton<sup>10</sup> and Susan Michie<sup>1</sup>

Initial version → 128 constructs sorted into 12 domains

2012 version → 84 constructs sorted into 14 domains

- ✓ TDF is a theoretical framework NOT a theory; provides a theoretical lens through which to view the **cognitive, affective, social and environmental influences on behavior**; does NOT propose testable relationships between elements.
- ✓ Initially developed for implementation research to identify influences on **health professional behavior** related to implementation of evidence-based recommendations.
- ✓ Extended to other areas in which changing behavior is important such as changing **patient behaviors**.



# 14 DOMAINS OF TDF

1. *Knowledge* – awareness of the existence of something
2. *Skills* – ability or proficiency acquired through practice
3. *Social/professional role and identity* – coherent set of behaviors and displayed personal qualities of an individual in a social or work setting
4. *Beliefs about capabilities* – acceptance of the truth, reality or validity about an ability, talent or facility that a person can put to constructive use
5. *Optimism* – confidence that things will happen for the best or that desired goals will be attained
6. *Beliefs about Consequences* – acceptance of the truth, reality, or validity about outcomes of a behavior in a given situation
7. *Reinforcement* – increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus
8. *Intentions* – conscious decision to perform a behavior or a resolve to act in a certain way
9. *Goals* – mental representations of outcomes or end states that an individual wants to achieve
10. *Memory, attention and decision processes* – ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives
11. *Environmental context and resources* – any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behavior
12. *Social influences* – those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors
13. *Emotion* – complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event
14. *Behavioral regulation* – anything aimed at managing or changing objectively observed or measured actions

# METHODS



Exploratory descriptive qualitative study conducted between August 2020 and January 2021



Eligibility: DPP participants at the Virginia Commonwealth University (VCU) Health Hub at 25th or Stony Point Women's Center who finished the first 6-months of the program (weekly sessions)



- Semi-structured telephone interviews
- Data saturation
- Interview guide based on the 14 domains of the Theoretical Domains Framework (TDF)
- Interviews were recorded and transcribed *verbatim*



- Interviews were thematically analyzed using ATLAS.ti.2
- Deductive analysis using the TDF domains
- Inductive analysis within each TDF domain

# RESULTS

12 interviews with DPP participants

VCU Health Hub



4 interviews

VCU Stony Point



8 interviews

Demographics



Mean age 61



100% Female



50% African American

# RESULTS

**Aim 1.** Explore **participants' perceptions of the DPP** offered at VCU and assess implementation of patient behavior changes in light of the Theoretical Domains Framework.

**Program improvements** proposed:

- making material less basic, more realistic examples, focusing on specifics about healthy foods/recipes, one-on-one component in addition to group sessions

**Online DPP Delivery:**

Advantages: time saved commuting, more flexibility, safety with COVID.

Disadvantages: less opportunity to interact with peers, lower engagement from participants online compared to in-person classes, losing people due to technology issues, Zoom fatigue.

*It's not like when you're sitting in the classroom and you're chatting with someone that's sitting beside you. I mean we didn't interact with each other. The interaction was all between the teacher, the facilitator, and those of us attending the class." (SP08)*

# RESULTS

**Aim 1.** Explore participants' perceptions of the DPP offered at VCU and assess implementation of patient behavior changes in light of the **Theoretical Domains Framework**.

## Knowledge

- Risk of developing T2DM (labs, A1C, weight, family history)
  - *“Because diabetes run heavily in my family and right now I don’t have it, but I was kind of frightened of it and I wanted to get more information on it, what to eat, what to do, you know so I can keep my numbers down.”* (HH05)
- Building on prior knowledge (plate balancing, nutrition labels, group activities)
  - *“Just seeing that and thinking back to how I was measuring and eating before I received the cups. It would have been helpful to have had it onset.”* (SP08)

## Intention (to implement lifestyle changes)

- Experiencing the benefits of the program for themselves
- Wanting to learn more about being healthy
  - *“I wanted to get more information on it, what to eat, what to do, you know so I can keep my numbers down.”* (HH05)
- Staying committed to the program
- Joining class due to a health concern to help implement lifestyle changes

# RESULTS

**Aim 1.** Explore participants' perceptions of the DPP offered at VCU and assess implementation of patient behavior changes in light of the **Theoretical Domains Framework**.

## Goals

- Weight Loss
- Prevent progression to diabetes
- Adopt a healthier lifestyle
- Develop mindset of accountability

## Beliefs about capabilities

- Self motivation and empowerment
  - *“How it [DPP] motivated me, empowered me. Just that I knew I was going learn something and I knew it was going to help. I knew it was going to let me get to my goal.”* (SP02)
- Overcoming setbacks
  - *“And so I was really excited about how things are going, but the last two months have just been awful because I haven’t been able to walk and I haven’t been able to, to, that was my primary method of exercise.”* (SP08)

# RESULTS

**Aim 1.** Explore participants' perceptions of the DPP offered at VCU and assess implementation of patient behavior changes in light of the **Theoretical Domains Framework**.

## Social influences

- Family and friends: relatives and friends participating as partners in the program; lack of support/influence from family/friends
- Other program participants: sharing advice on implementing food/activity habits; forming relationships/friendships with other participants to get through the program; sharing set-backs and experiences; less pressure when in group-setting
- Coaches: forming relationships with coaches; consistency in coaching style; motivation from coaches

## Skills

- Learning new ways to exercise: doing exercises demonstrated by coaches, becoming more aware of the importance of exercise
- Learning about reading nutrition labels and measuring food portions
- Developing new food and activity behaviors and changing attitudes towards lifestyle changes
- Developing stress management skills

# RESULTS

**Aim 1.** Explore participants' perceptions of the DPP offered at VCU and assess implementation of patient behavior changes in light of the **Theoretical Domains Framework**.

## Reinforcement

- Exercise incentives → stretch bands
  - *“another good thing was one that you all gave out [...] stretch bands and showed some different exercises... I guess you know if there was some, some type of sponsors because I enjoy getting that little, that band.”* (HH04)
- Nutritional incentives → measuring cups
  - *“Just seeing that and thinking back to how I was measuring and eating before I received the cups. It would have been helpful to have had it onset.”* (SP08)



# RESULTS

**Aim 2.** Understand factors that lead to attrition of the program and what recruitment strategies could be used to increase participation among underserved communities.

Strategies to **improve recruitment**:

- diversifying recruitment sites (e.g., churches, gyms, senior communities); advertising the program through social media, flyers, personalized letters, or television advertisements; providing incentives to participants; inviting individuals to trial the program; and using current participants as ambassadors.

Strategies to **improve retention**:

- weekly check-ins from coaches via email/text/phone, group sharing of recipes and their experiences, meetings outside of the program for outdoor activities, incentives (exercise tools, food discounts), and adopting a hybrid format

# Comparison of In-Person and Virtual DPP Delivery

	Cohort 3 (n=13) In Person Jan-April 2020	Cohort 4 (n=25) Virtual Jun-Oct 2020	Cohort 5 (n=14) Virtual Jan-April 2021
Median Age (years)	57	64	60
Average sessions attended (number)	6.6	9.2	8.7
Retention	25%	58%	54%
Average physical activity (minutes/week)	176	160	147
Average Weight Loss (lbs.)	3	6	4
Participants met weight loss goal	13%	24%	18%



Attendance

% Weight loss

# CONCLUSIONS

- Overall, participants had **positive perceptions** about the DPP at VCU but recommended some improvements.
- Participants reported gaining **multiple skills** during the program that they applied in real life.
- Several recruitment and retention strategies have been proposed. Maintaining **fidelity** while incorporating **adaptations** to the program will be critical, especially if adopting a hybrid in-person/online modality in the future.

# SELF-ASSESSMENT QUESTION

1. Why was the Theoretical Domains Framework used in this study?
  - a. To provide guidance on the cognitive, affective, social and environmental influences on clinician behavior
  - b. To provide guidance on the cognitive, affective, social and environmental influences on patient behavior.
  - c. To identify relationships between the domains and constructs.
  - d. To develop a theory to explain why DPP participants drop out.

# SELF-ASSESSMENT QUESTION

2. What strategies have been proposed to improve recruitment and retention in the DPP program at VCU?

- a. Use current participants as ambassadors.
- b. Weekly check-ins from coaches via email/text/phone.
- c. Adopting a hybrid format.
- d. All of the above.

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- Ladan Karim-Nejad, P3

## Co-investigators:

- Dave Dixon
- Evan Sisson

# Claiming Credit

## Submit Attendance

1. *If you have **not participated in a VCU Health CE program** in the past:*
  - Go to [vcu.cloud-cme.com](https://vcu.cloud-cme.com) to create an account – make sure to add your cell phone number
2. If you **have participated before:**
  - Text the course code to (804) 625-4041.  
The course code for this event is: **22210-18313**

## Complete Evaluation & Claim Credit

1. Go to <https://vcu.cloud-cme.com> OR Open the CloudCME app on device
2. Sign in using email address used above Click “My Evaluations”
3. Click “My CE” Click the name of the activity to Click “Evaluations and Certificates”

**ceinfo@vcuhealth.org**