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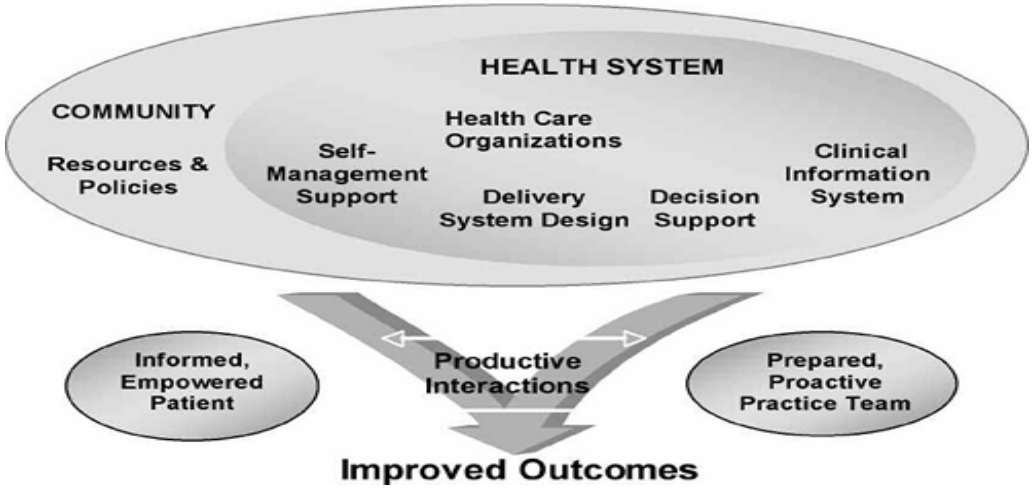
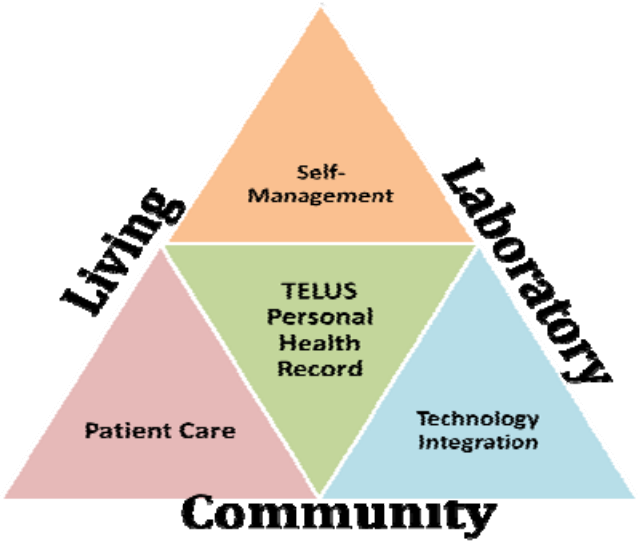
Usability Evaluation of Online Personal Health Records in Monitoring and Management of Patients with Type 2 Diabetes

Peyman Azad Khaneghah, Antonio Miguel-Cruz , Pamela Bentley, Lili Liu, Eleni Stroulia and Martin Ferguson-Pell

Theoretical Background





Wagner, E. H. (1998). Chronic disease management: What will it take to improve care for chronic illness? *Effective Clinical Practice: ECP, 1*(1), 2-4.

Two pilot studies between 2011 and 2013

Phase 1: Evaluate the practical viability of using TELUS PHR in monitoring patients with Type 2 diabetes:

- THS may be used in remote monitoring of patients with type 2 diabetes.

Phase 2: Evaluate advanced TELUS PHR functionalities, such as automated data uploading and secure messaging system

- Issues with automated uploading system identified and reported to TELUS.
- The messaging system can successfully be used for communication.

Phase 2 Expansion (2014 – 2015)

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TELUS | HEALTH
Information for Life.

Collaboration

Access to Patients

Primary Care Network GRANDE PRAIRIE

Primary Care Network SOUTH CALGARY

Use of Technology

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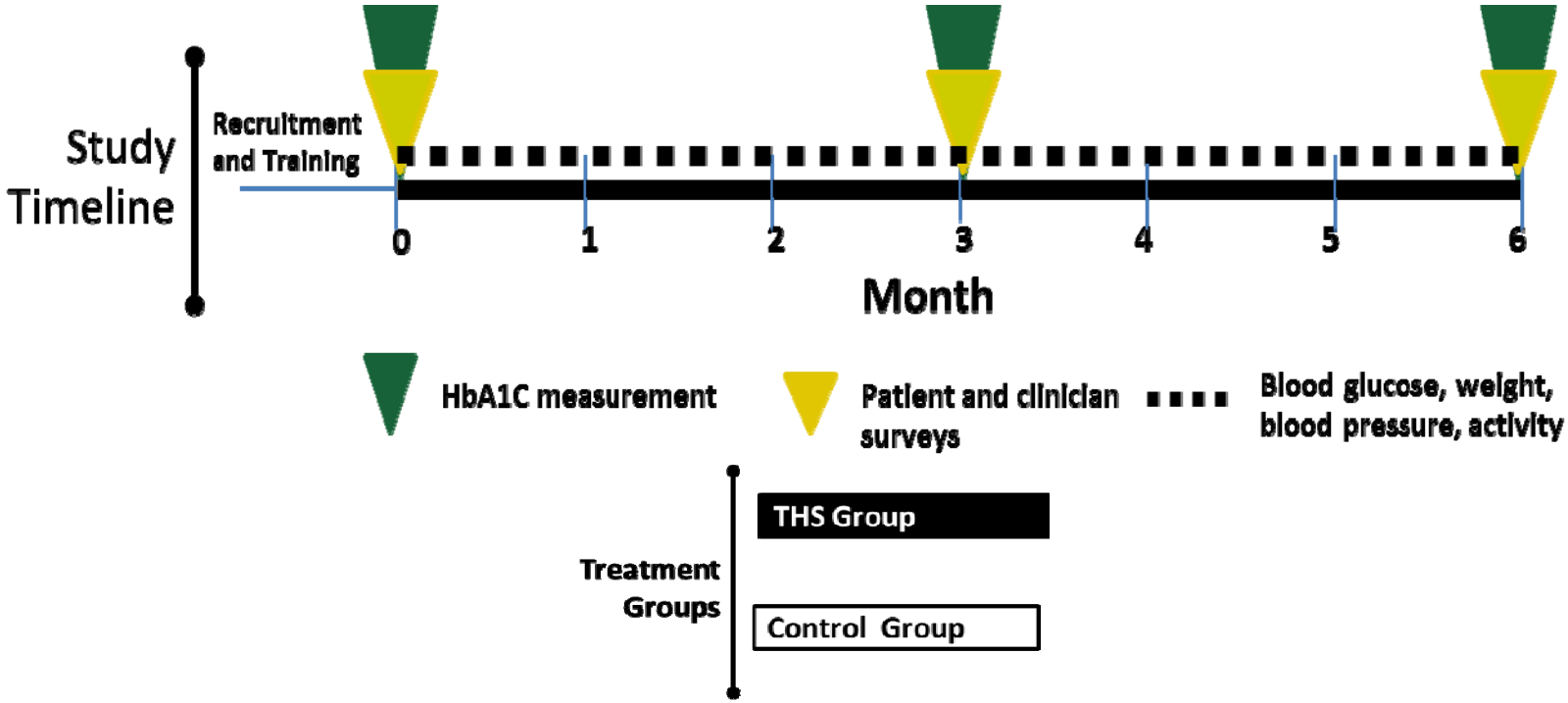
Study Objectives

To determine if:

1) Patients find the TELUS PHR easy to use
2) Use of TELUS PHR improves patient care
3) Use of TELUS PHR results in relevant changes in HbA1C in patients with Type 2 diabetes

Study Procedure



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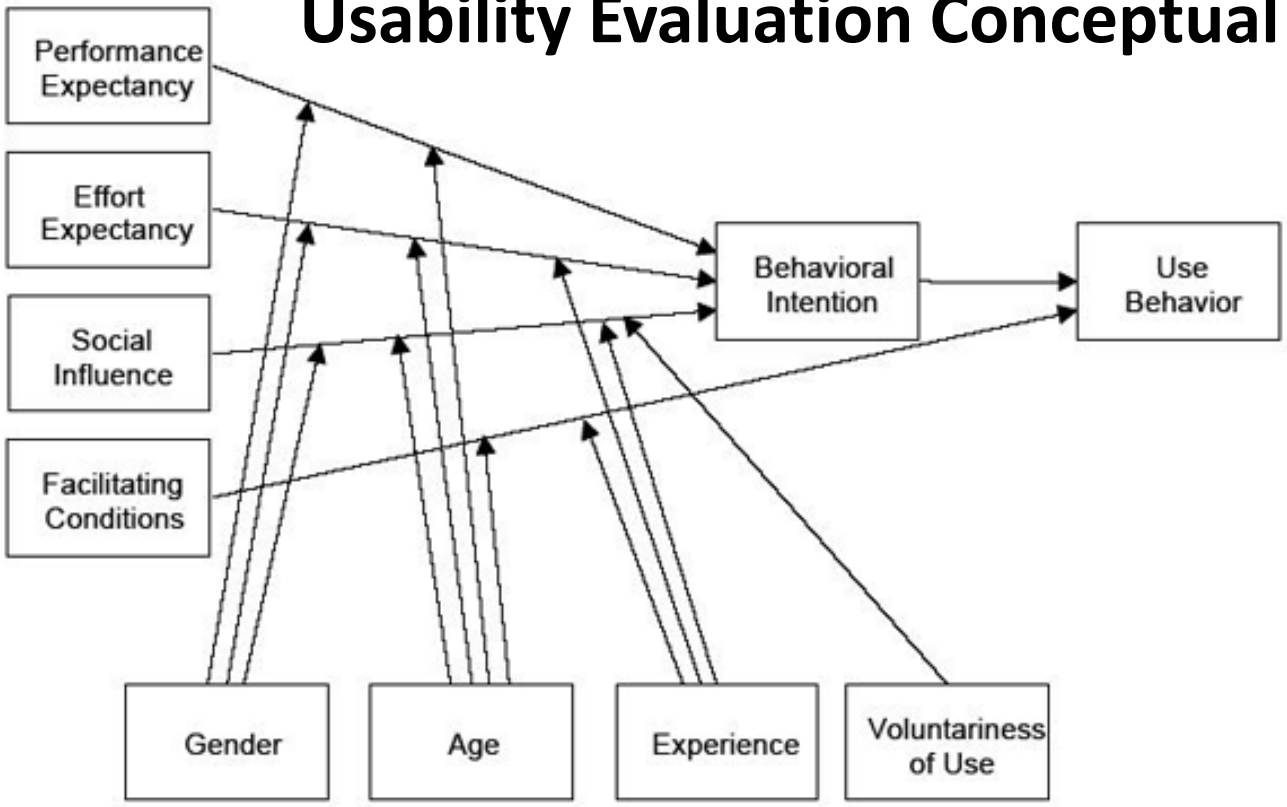
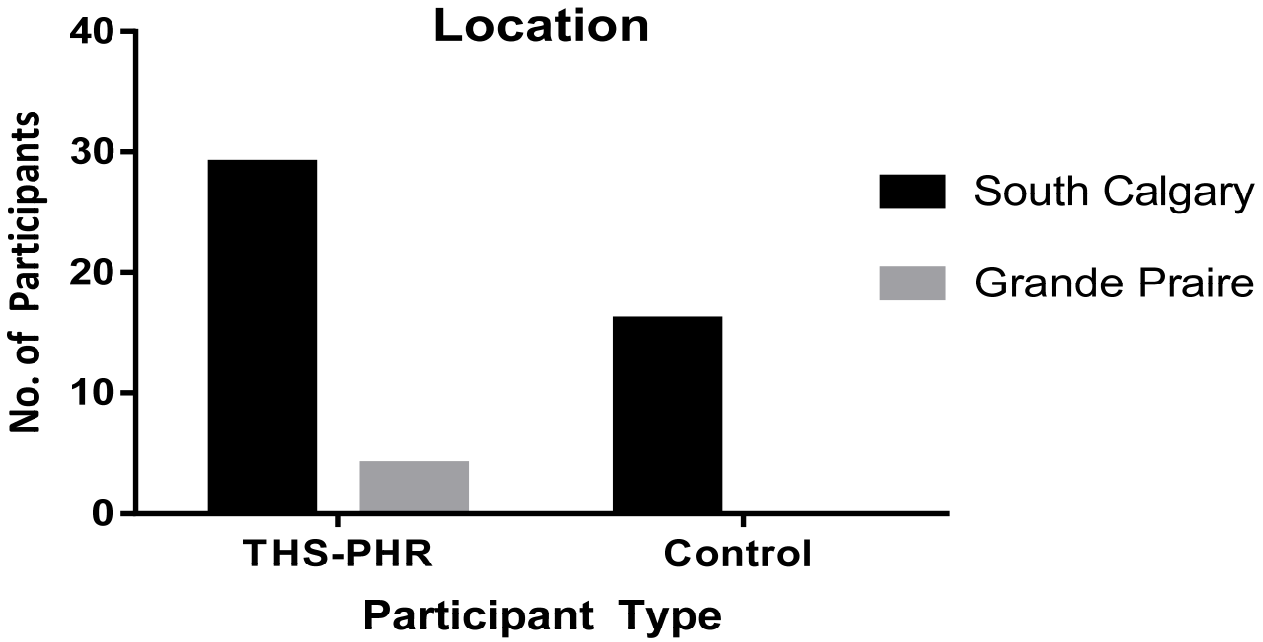
Usability Evaluation Conceptual Model



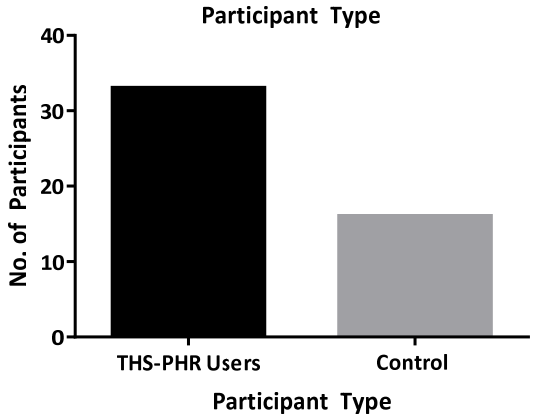
Unified Theory of Acceptance and Usability of Technology (UTAUT), Duyck et al, 2010 and Venkatesh et al, 2003

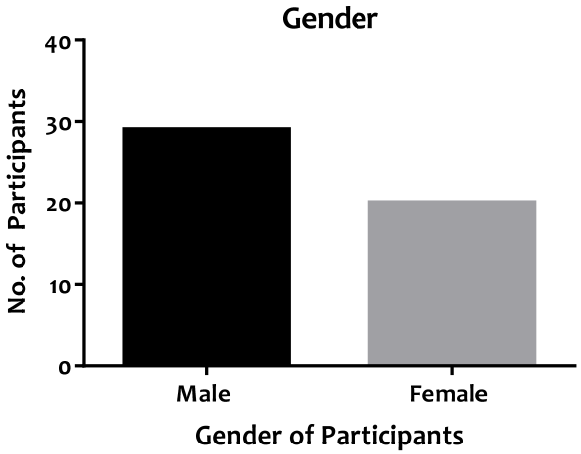
Participant characteristics at baseline

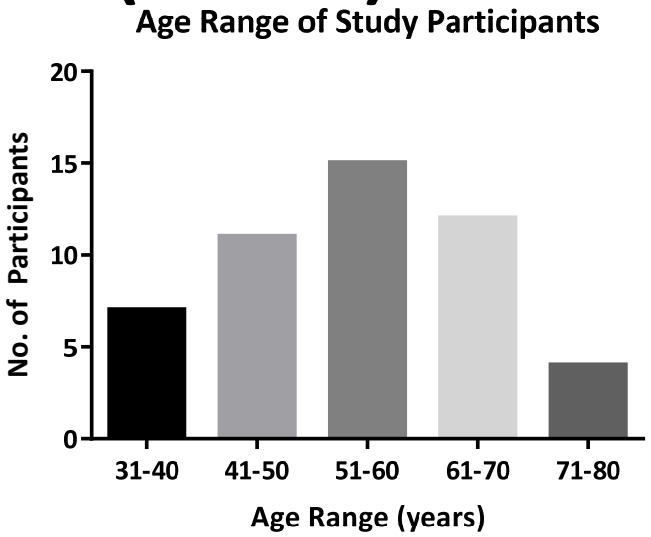
49 patients signed the consent form

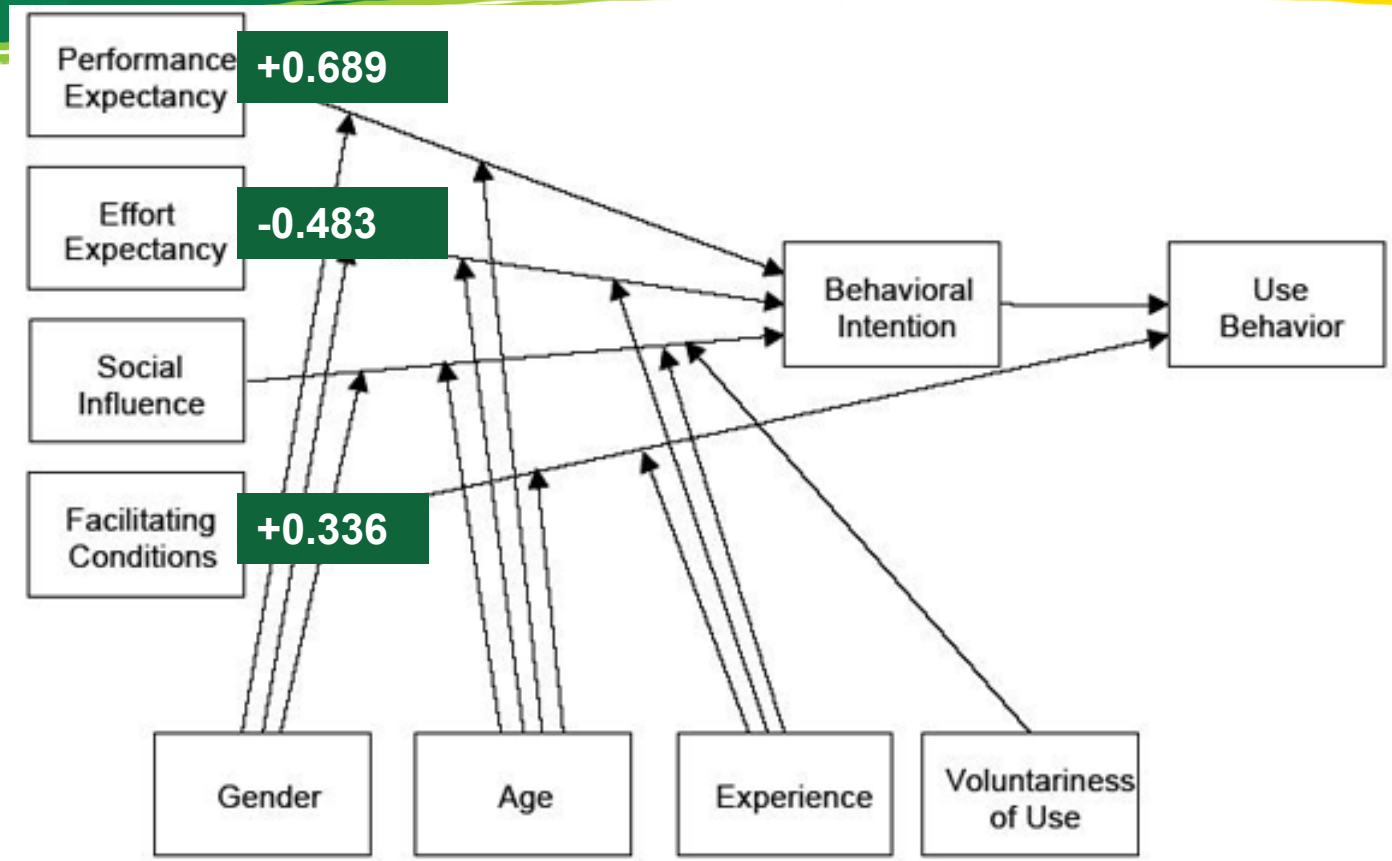


Participant Characteristics (contd.)

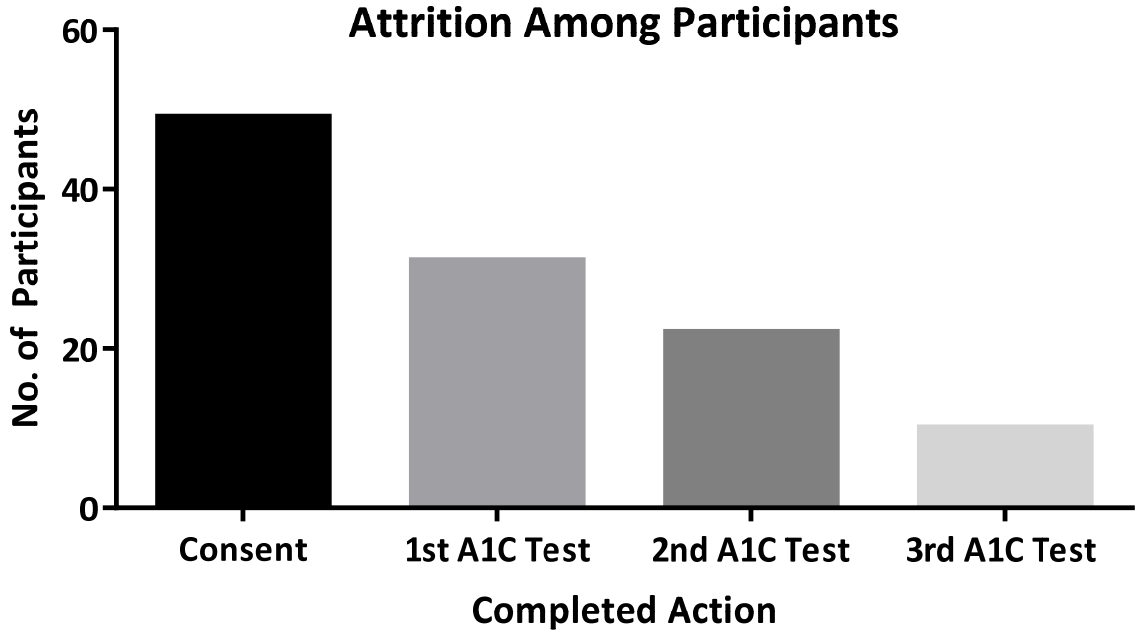







Performance Expectancy
+0.689
Effort Expectancy
-0.483
Social Influence
Facilitating Conditions
+0.336
Behavioral Intention
Use Behavior
Gender
Age
Experience
Voluntariness of Use

Adherence to the Program Over 6 Months (HbA1C measurements)



Factors Influencing Adherence

1) Transient population in Grande Prairie
   (AHS reports as high as a 70% no-show rate for appointments in Grande Prairie)

2) Low adherence to long-term programs among this patient population

3) Low perceived health benefits among this patient population

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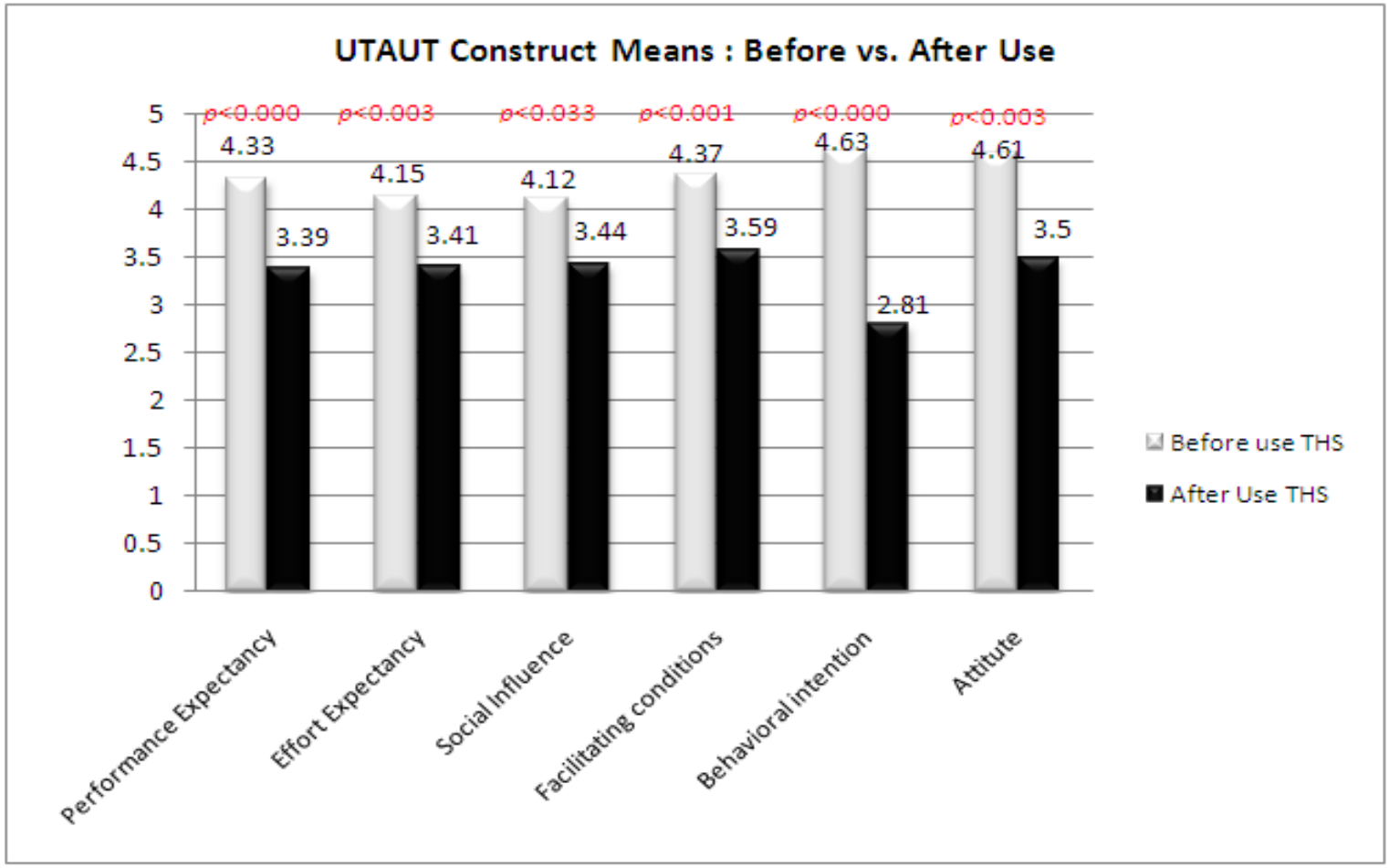

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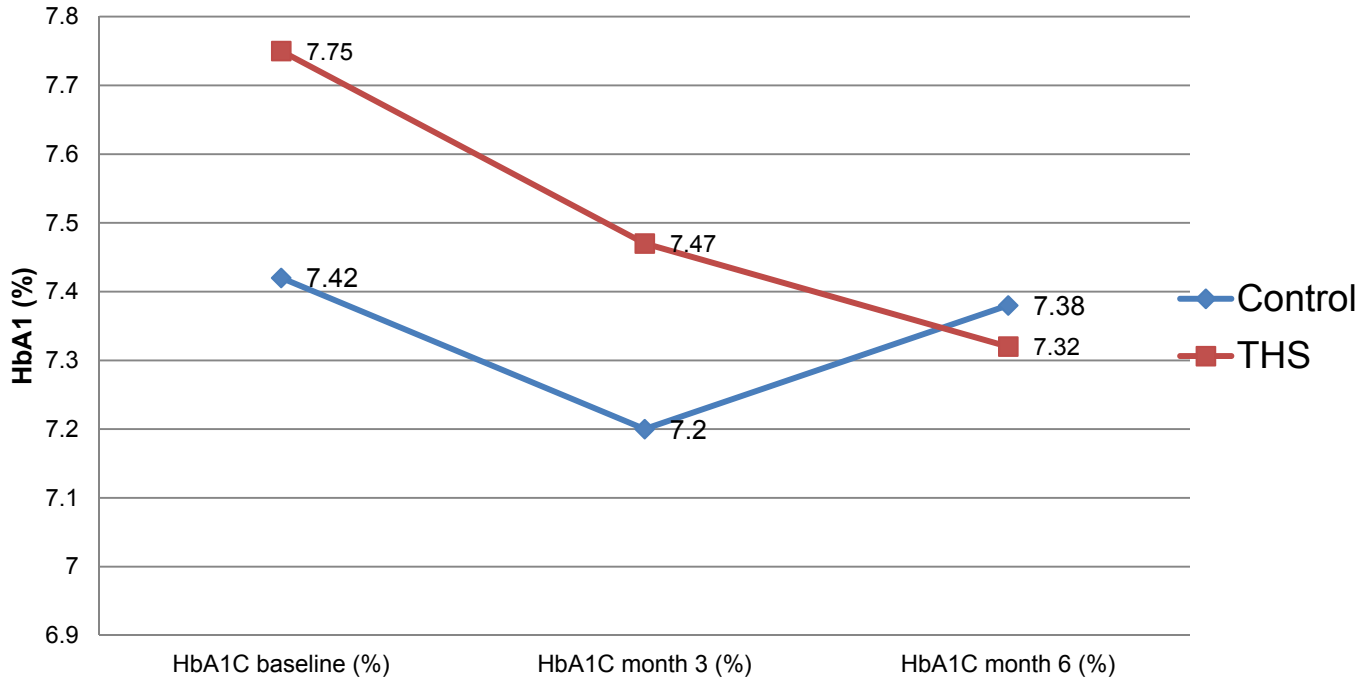
Effects on HbA1C



Patients who adhere to the program may show improvement reflected by decrease in HbA1C levels

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Conclusion

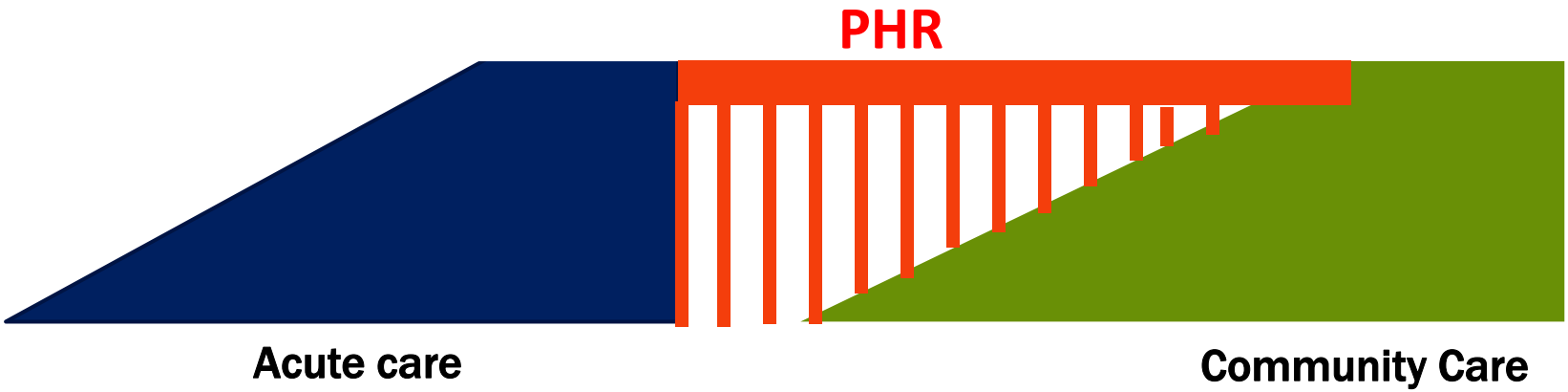
1) The type 2 diabetes population is not well suited to long-term health monitoring using PHRs

2) Personal motivations may negatively impact the long-term use of the system among patients with type 2 diabetes.

3) There is some evidence that using the PHR is effective on clinical outcomes such as HbA1C.

Potential uses of PHRs in Chronic Care

To aid patients in transition by using technology to create a bridge between acute care and the community



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~ Thank you ~

For Further Information, Contact

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Patients' Baseline Usability Questionnaire Results

Path	Path Coefficient β	t	f^2	R^2	Quality of fit
PE→ BI	+0.689	1.980*	0.425	0.628	0.475
EE→ BI	-0.483	2.275**	0.166		
SI→ BI	+0.256	0.886	0.090		
FC→ BI	+0.336	2.415**	0.101		

* p<0.05; **p<0.01; f^2: effect size $f^2 = \frac{R^2_{included} - R^2_{excluded}}{1 - R^2_{excluded}}$; Q^2: ; Goodness of fit $= \sqrt{\overline{Communality} * \overline{R^2}}$

(Performance expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating conditions (FC), Behavioral intention (BI))

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Usability Evaluation Findings