eHealth Coaching


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Chronic conditions leading cause of death...

By 2030, chronic conditions will cause 75% of all deaths globally

Global overweight and obesity

33% (2005)

57.8% (2030)

What is diabetes control and why should we care?


Over 6.8 billion mobile device users globally!
But, can eHealth provide effective solutions?
TODAY’S OBJECTIVES

➢ Describe the evolving concepts, use and evidence for Health Coaching: *why now?*

➢ Present some examples of Health Coaching using mobile technology and cloud computing: *great beginnings, but?*

➢ Critical Reflection: *what are the Pros and Cons of eHealth-mHealth for Health Coaching?*
A word about *Coaching*?

- Health wellness or disease specific
- Comprises elements of health promotion, disease prevention and management/care/rehabilitation
- Variety of trained health care providers
- Offer support, facilitate learning (education), behaviour change, problem solving, advocacy, goal setting, etc.
Examples of potential factors that may influence effectiveness of coaching

Adapted from Hutchinson, BMJ 1999
Diabetes Coach & Self-Care

Self-care maintenance

Self-care monitoring

Self-care management
A growing body of evidence pertaining to health coaching for chronic conditions, including T2DM, suggest that individuals achieve better health outcomes with health coaching than with traditional education and support. Sherifali D. *Journal of Diabetes*, 2017.

The pooled effect of health coaching overall was a statistically significant reduction of A1C levels by 0.32%. Longer health coaching exposure >6 months resulted in a 0.57% reduction. Sherifali D et al. *Can J Diabetes*, 2016;40:84-94.

Only 2 of the 8 trials leveraged technology for coaching communication – prospects for the future?
Evidence Based Components of Health Coaching

Diabetes Coach Model

- Case management & monitoring
- Self-management education & support
- Psychosocial support
- Behaviour modification

Diana Sherifali
2017, J. Diabetes
1) Case management and monitoring
   • process of care and system navigation

2) Self-management education and support
   • ‘just in time learning’: knowledge, skills and problem solving

3) Behaviour modification - motivational interviewing
   • ‘not all behaviour change is equal’: goal setting, reinforcement, behavior change and maintenance

4) Psychosocial Support
   • address social conditions and supports, manage distress, active listening and empathy
Diabetes Coaching Triple Aim Framework

1) *Patient experience*
   • quality of life
   • beyond conviction, confidence, attainment

2) *Improving health of populations*
   • Health promotion ‘upstream determinants’, prevention (primary, secondary), risk status, disease burden, premature mortality

3) *Cost of Health Care*
   • mitigate healthcare utilization
   • foster self care and management: ‘hidden healthcare system’
where to?
Moving Health Promotion and Care Out of Traditional Centers Into New Spaces

INDUSTRY

CLINICIAN

HEALTH COACH

PATIENT

BEHAVIOUR CHANGE

DISTRIBUTION CHANNELS

BIG DATA & CLOUD EHR/PHR & TELEMONITORING

SENSORS

Ontario

TELUS

CISCO

IBM

nexj

Cloud DX

chipcare

ventureLAB

ACADEMIC PARTNERS

NON-FOR-PROFIT PARTNERS

THE LUNG ASSOCIATION Ontario

otn.
THE HEALTH ECOSPHERE: AN INNOVATION PIPELINE FOR COMMERCIAL HEALTH SOLUTIONS
PERSONALIZED eHEALTH

CLINICIAN

BIG DATA

HEALTH COACH

CONNECTED PERSON
eHEALTH IN NEW SPACES

YOUR HOME

PHARMACIES

REMOTE COMMUNITIES

SCHOOL & WORK
TECHNOLOGY TO FACILITATE HEALTH

PERVERSIVE TECH

WEARABLES
Concurrent Flow of Activities Within the Health Ecosphere Innovation Pipeline
Video of NexJ Connected Health
Game Changing eHealth Technology Research

Connecting People & Information
- Personal Health Information
  - i.e., Biometrics, Activity, PHRs, EMRs, EHRs
- Wellness Network
  - i.e., Providers, Health Coaches, Advocates, Family, Friends
- Health Content
  - i.e., Instructions, Recall Information, Side Effects
- Social & Gaming
  - i.e., Team & Group Activities, Challenges, Rewards

Informed

Personal Health Coaching
- Intelligent Service Model
  - Conditional Coaching
    - Diabetes
    - Hypertension
    - Mental Health
    - Weight
    - Physical Activity
    - Medications
  - Wellness Coaching
  - Applied Content

Educated & Supported

Positive Outcomes
- Sustained Behavior Change
  - More active & fun lifestyle
  - Fewer appointments with healthcare system
  - Fewer visits to Emergency
  - Less dependence on medications & supplements

Responsible

An Engaged Person is a Healthier Person
Personal Health Coaching to Promote Behaviour Change

Provider Portal
Physician prescribes personalized health metrics for patient to track condition.

Mobile Health Coach
Patient receives health coaching and records personal health metrics.

Patient Portal
Patient understands the relationship between their behaviour, bio-metrics, and how they feel. The patient becomes self managing through sustained behaviour change.
Health Coaching enabled by eHealth-mHealth

Type 2 diabetics given free BlackBerry (& data) pre-loaded with NexJ Health Coach

Log diet, exercise, mood and energy

Culturally congruent instructional videos

Health Coach monitors, prescribes plans & motivates via mobile or a secure portal

Daily secure communications & reminders via mobile
Blood Glucose – Weekly AVG
June 2011 – Oct 2011

Radical reduction by week 4 results in physician reduction of Diamicron dose

Regulation then under more behavioural control
Exercise increases to several sessions/ wk.

Death in family results in 3-day exercise gap & glucose spike, followed by resumption & reduction
Food View
October 16-19

Food pictures reflect healthier choices
*Note: absence of simple carbohydrates & introduction of salad
Pilot Health Coaching – Diabetes

**Purpose**

- To pilot test personal health coaching using NexJ Connected Wellness
- Intervention effects on glucose regulation, weight, waist circumference, BMI, depression, anxiety, mood, and quality of life
- Create innovative improvement cycle between deployment & software engineering

**Pilot Single Arm Trial**

- N=21 type 2 diabetic patients from a lower socioeconomic strata community
- Patients with type 2 diabetes at various levels of management
- Personal health coaching with NexJ Connected Wellness
- Behavioural focus on Exercise, Diet, Stress Management and Medication Adherence

**Results**

- Significantly Lowered HbA1c in Poorly Managed T2DM
- Innovation Cycle Highly Effective at Developing
- High Satisfaction with Intervention (Low Attrition)

Health Coaching reduces HbA1c in Type 2 Diabetic Patients from a Lower-SES Community: Randomized Controlled Trial

N=131 type 2 diabetic patients from a lower socioeconomic strata community

Intervention and control groups both received health coaching, the intervention group also received NexJ Connected Wellness

The intervention group showed a significantly sharper rate of improvement of HbA1c

Pilot trial results, qualitative user experiences, and data mining of behavioral tracking available in sister publications

Improved Results with NexJ Connected Wellness

- Significantly Lowered HbA1c in Half the Time
- Significant decrease in Weight & Waist Circumference
- Improved Mood, Satisfaction with Life, Quality of Life
Participant experiences in a smartphone-based health coaching intervention for type 2 diabetes: Qualitative Inquiry

Journal of Telemedicine and Telecare, 2016:22(3)

Four Themes Emerged

- **Smartphone & Software**
- **The Health Coach**
- **Frustrations in Managing Chronic Conditions**
- **Self Activation**

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- ‘I liked sending all the information to my health coach. I didn’t have to tell her’ (Pt. #11, HbA1c: –2.0%)
- ‘I could just take a picture ... a visual record of what I have eaten’ (Pt. #1, HbA1c: –0.6%)
- ‘It was a helpful reminder of keeping a check on my blood...what I eat...what I shouldn’t’ (Pt. #4, HbA1c: –1.1%)
- ‘I think this study helped me emotionally a lot, more than physical, I feel emotionally happy. That is important to me’ (Pt. #9, HbA1c: –0.4%)

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“It was like the doctor looking at you. I have to do this, I have to test my blood sugar, I have to test my pressure, how much exercise...Your meal, what you eat...you have this eye looking at you on the phone” (Pt. #6 –HbA1c: +0.1%)
Data mining of a remote behavioural tracking system for type 2 diabetes patients:

Randomized Controlled Trial

Journal of Medical Internet Research, 2016:1(1)

- N=29 type 2 diabetic subgroup participants from RCT
- Goal to understand the relationship between tracker use in NexJ Connected Wellness and overall glucose regulation
- Trackers of interest: Exercise, Diet, Blood Glucose
- The intervention group showed a significantly sharper rate of improvement of HbA1c

**Improved Results with NexJ Connected Wellness**

- Single Tracker Use of Diet Tracking Associated with Reduced HbA1c
- Significant decrease in Weight & Waist Circumference
- Improved Mood, Satisfaction with Life, Quality of Life
Canada-India Diabetes eHealth Coaching Project

Let's Harness the Power of eHealth
Local to Global

Amber Fort, Jaipur
Qualitative study of type 2 diabetes and depression in two villages in rural Andha Pradesh identified very different pathways to care for these medical conditions, where patients avoid or bypass the formal health system.

- **Diabetes**: is familiar (called ‘sugar’ or ‘sugar disease’) appears to carry little or no stigma – indeed, may be seen as a sign of modest affluence. Yet, treatment is unlikely to be sought in a recognized medical clinic.

- **Depression**: is deeply problematic and stigmatized. When individuals sought help they typically present with physical symptoms or sleeplessness – rarely admitting to any kind of mental distress.

Importance of healthcare outside the formal health system provided by ‘registered medical practitioners’ (RMP), who despite the title are neither registered or trained.

Ownership of phones did not translate (yet) into widespread use: basic phones, seasonally erratic electric supply, short battery life, limited use.

Promotion of ‘self-management’ may not be readily translated to a country like India as proponents of m-Health might assume.
Your Reflections ?
Research on e-Health Coaching


Figure #1 – Breakdown by Smartphone Usage Group

Wayne, N. et al. JMI R 2016

Intervention Group (n=48)

Used smartphone software (n=39)

- HbA1c Reduction < 0.5% (n=10)
  - HbA1c Diff = +0.36%
  - Age: 55.4 years
- HbA1c Reduction >=0.5 (n=29)
  - HbA1c Diff = -1.36%
  - Age: 53.4 years

Did not use smartphone software (n=9)

- HbA1c Reduction < 0.5% (n=5)
  - HbA1c Diff = -0.38%
  - Age: 56.0 years
- HbA1c Reduction >= 0.5 (n=4)
  - HbA1c Diff = -1.28%
  - Age: 42.0 years

N = 29 used app & sig. reduced HbA1c

N = 9 did not use app

Mainly tracked glucose, food intake & exercise

Glucose Only (n=7)
  - HbA1c Diff = -1.74%
  - Age: 53.6 years

Food Only (n=2)
  - HbA1c Diff = -1.95%
  - Age: 60.0 years

Glucose + Exercise (n=11)
  - HbA1c Diff = -0.97%
  - Age: 51.2 years

Glucose + Food (n=3)
  - HbA1c Diff = -1.07%
  - Age: 62.0 years

Glucose + Food + Exercise (n=6)
  - HbA1c Diff = -1.55%
  - Age: 50.7 years

Glucose Tracking

No Glucose

Glucose Tracking

Glucose Tracking