



Healthy habits: Supporting patient behavioral change in functional medicine

The Institute for Functional Medicine (IFM)
Practice Implementation Session

Dr. Christopher Knee, ND MSc
AIC June 2022



Background

- Who am I?
- How did we get here?
- Treatment adherence: why improving health is hard!



Dr. Christopher Knee, ND, MSc

CCNM Graduate, 2013

Clinical Practice: Ottawa, Canada

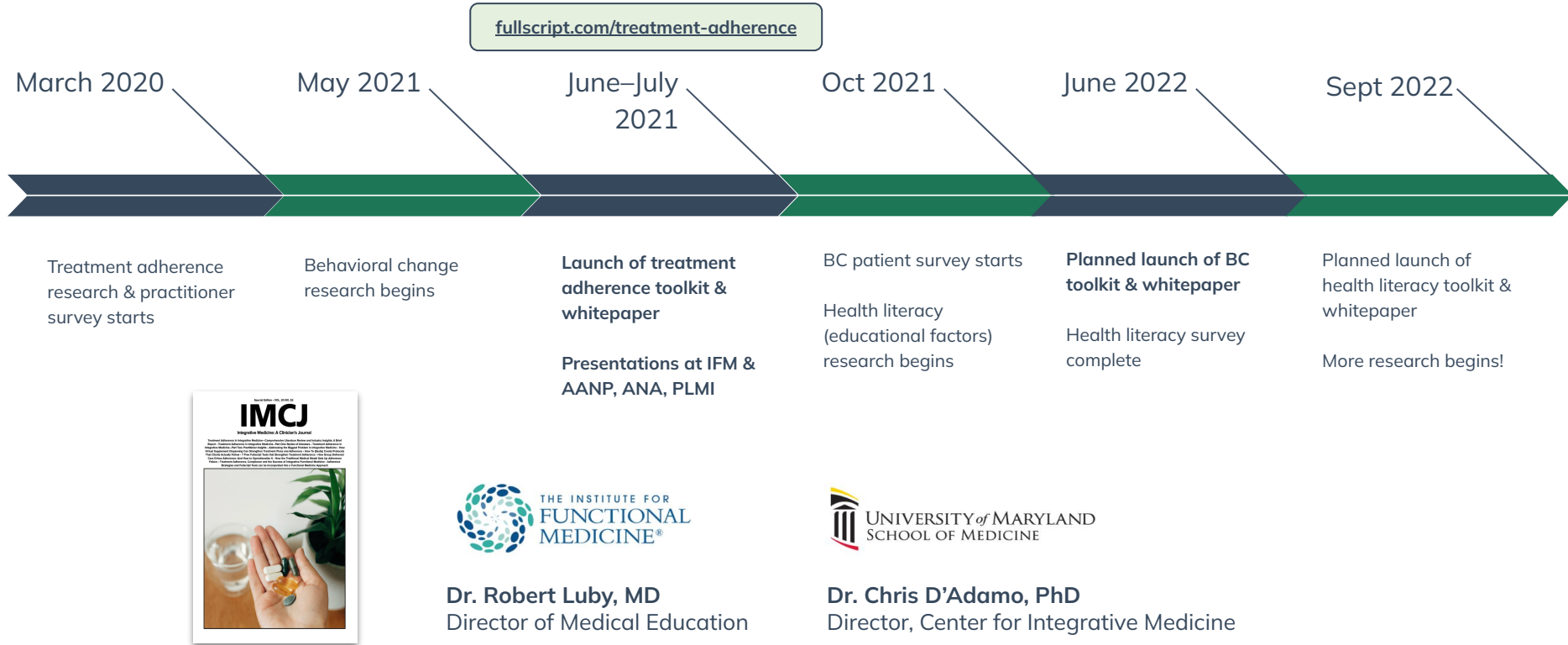
Manager, Medical Education & Research

Fullscript

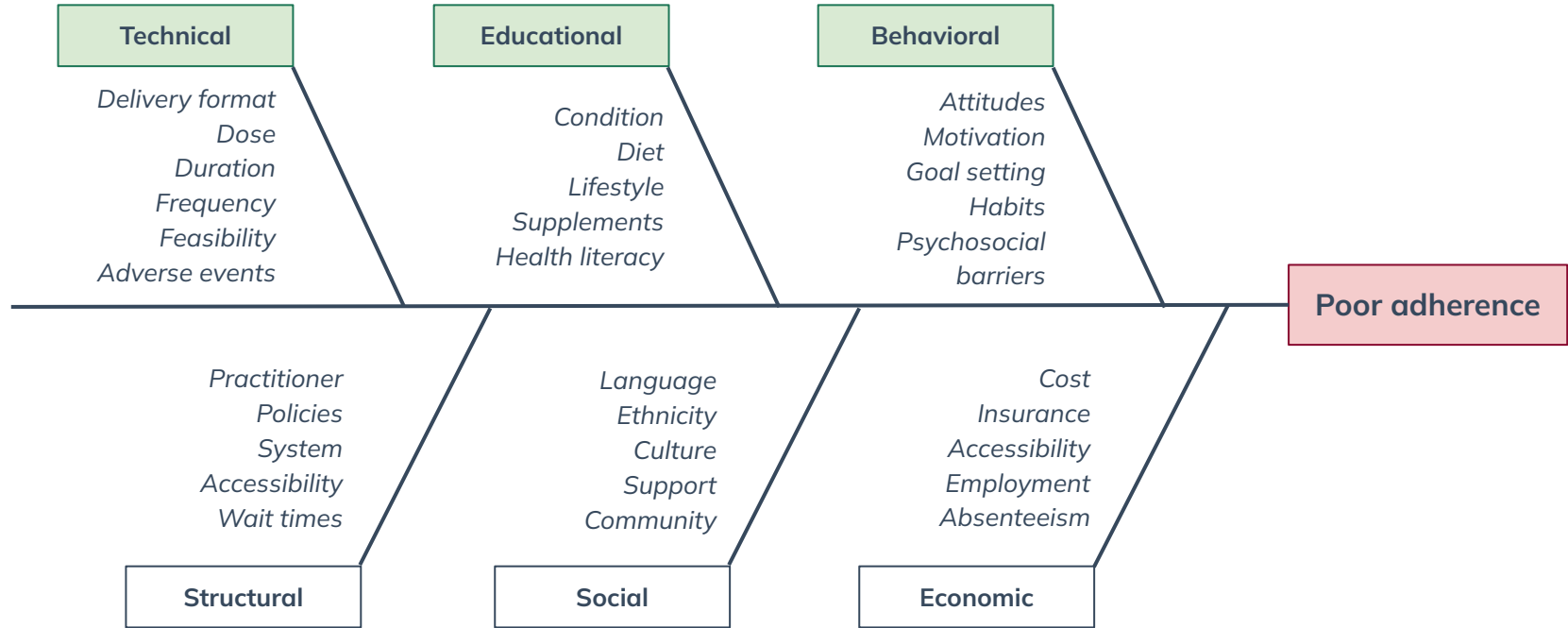
Conflicts of interest:

Full-time employee (Fullscript), part-time private practice

Evolution of research at Fullscript



There are **hundreds of individual factors** that influence treatment adherence.



Behavioral change 101

- The key barrier to long-term health outcomes
- Role of integrative & functional medicine

What is the problem?

Continual rise of chronic disease

60%

of Americans live with
a chronic disease

40%

live with more than one

(CDC, 2022)

40–50%

of deaths in the
United States are
linked to behaviors

(McGinnis 1993)(Mokdad 2004)

Behavioral risk factors among Americans:

77% do not have a normal BMI

50% do not meet physical activity guidelines

37% report greater than moderate alcohol consumption

36% get less than 7 hours of sleep

18% are smokers

- CDC 2013 (Liu 2016)

For patients in conventional care...

55%

indicated that they did not discuss health behaviors with their GP

78–89%

indicated that BC advice would have been appropriate or helpful

23–52%

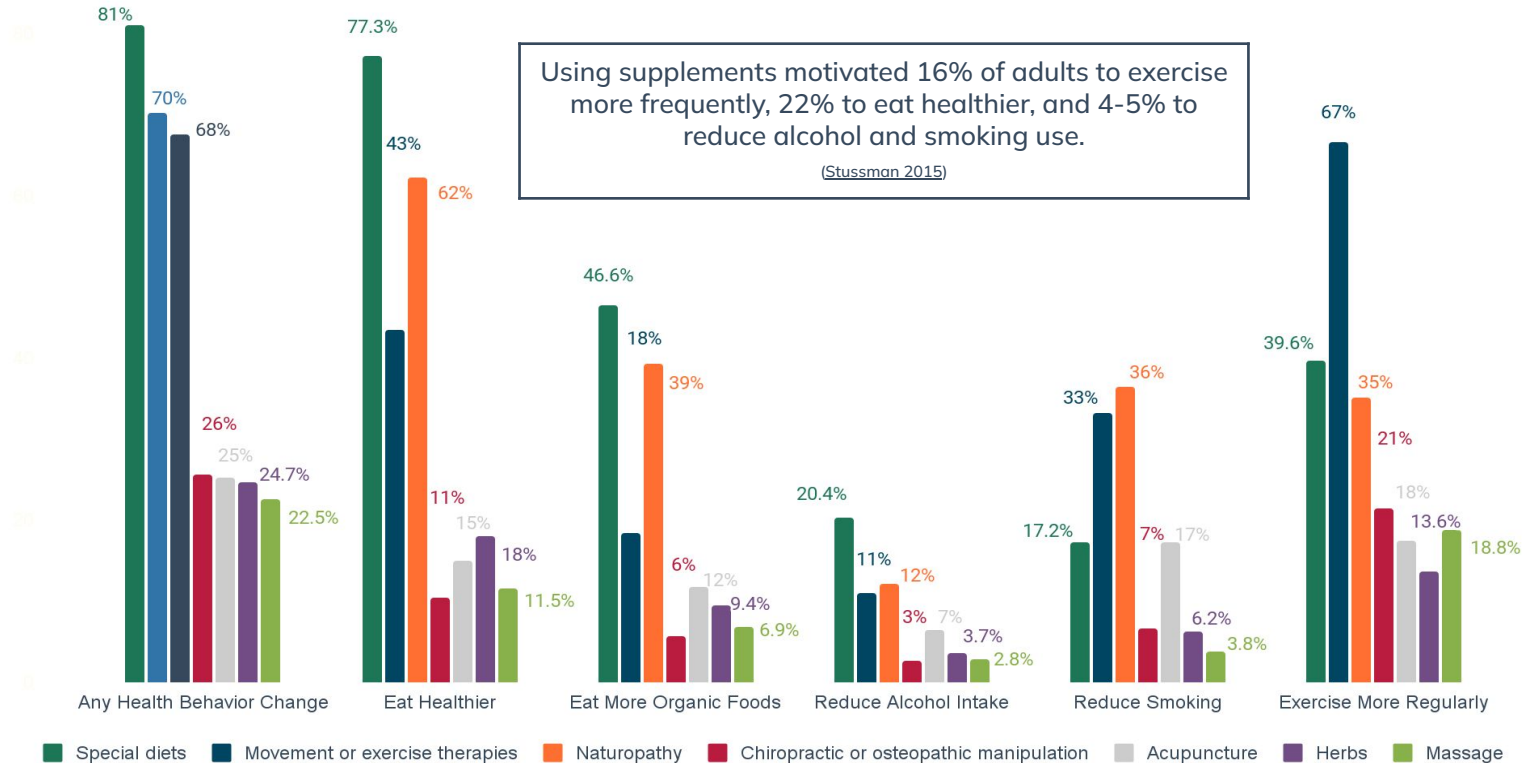
indicated that they would have liked to have received additional support for various health behaviors

66

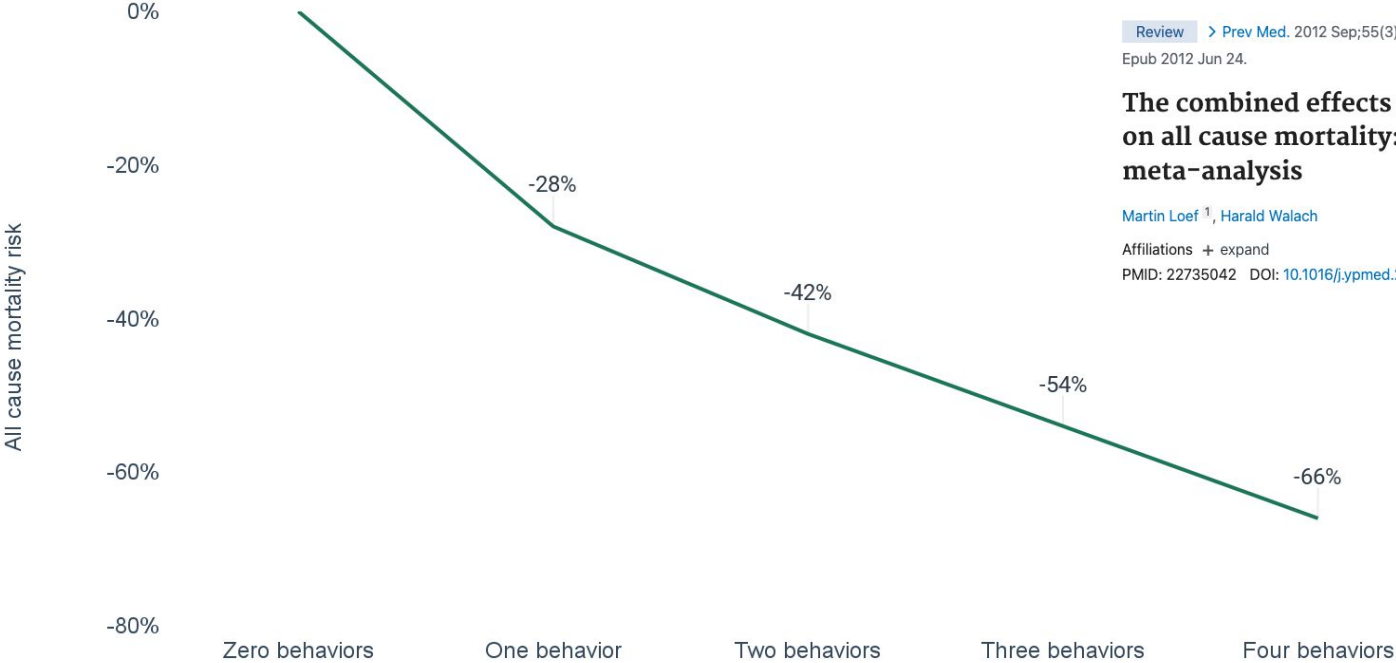
Integrative medicine is well poised to support BC, particularly as an adjunct to conventional care.

[\(Attias 2016\)](#) [\(Bradley 2012\)](#) [\(Bradley 2006\)](#) [\(Kessler 2018\)](#) [\(Kligler 2011\)](#) [\(Leach 2019\)](#) [\(Shi 2018\)](#) [\(Wolever 2010\)](#) [\(Wolever 2017\)](#)

Healthy behaviors among integrative medicine users



The importance of addressing health behaviors



[Review](#) > [Prev Med.](#) 2012 Sep;55(3):163-70. doi: 10.1016/j.ypmed.2012.06.017.
Epub 2012 Jun 24.

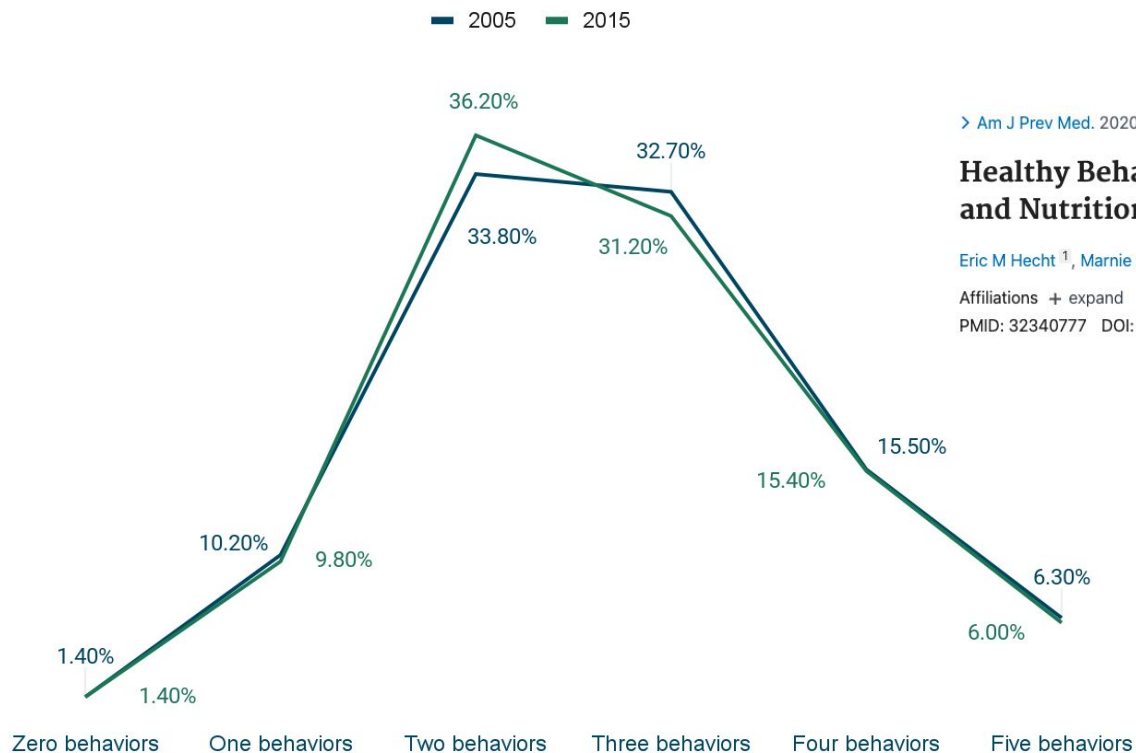
The combined effects of healthy lifestyle behaviors on all cause mortality: a systematic review and meta-analysis

[Martin Loeff](#)¹, [Harald Walach](#)

Affiliations + expand
PMID: 22735042 DOI: 10.1016/j.ypmed.2012.06.017

[\(Loef 2012\)](#)

Americans are trying!



> [Am J Prev Med.](#) 2020 Aug;59(2):270-273. doi: 10.1016/j.amepre.2020.02.013. Epub 2020 Apr 25.

Healthy Behavior Adherence: The National Health and Nutrition Examination Survey, 2005-2016

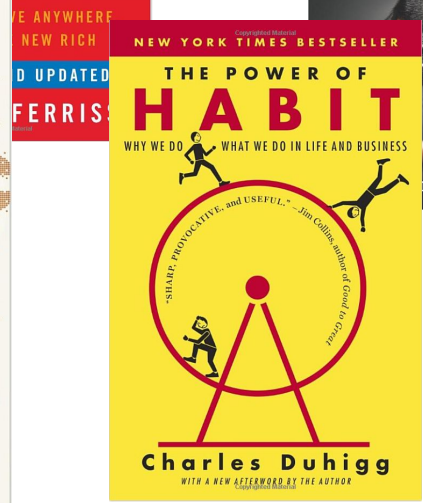
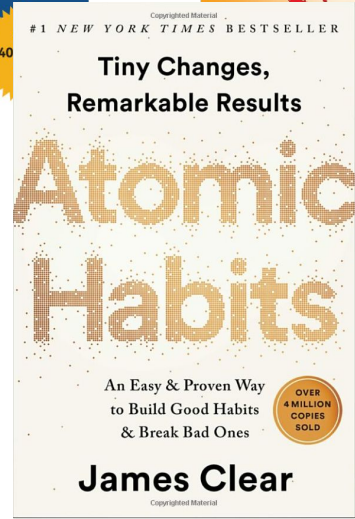
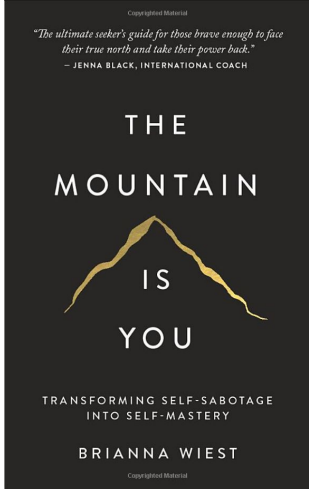
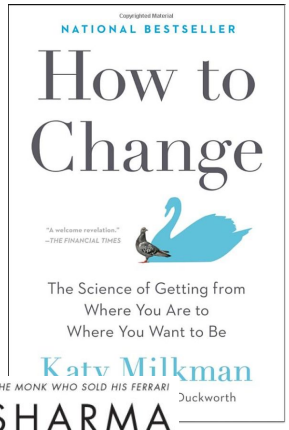
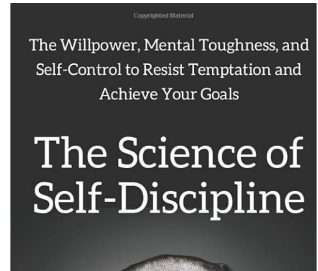
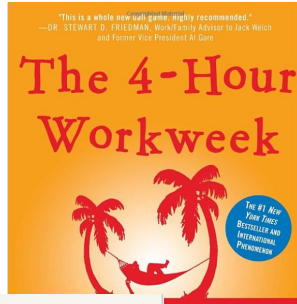
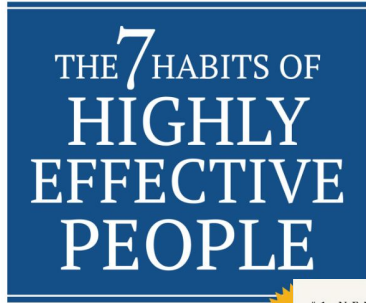
Eric M Hecht ¹, Marnie R Layton ², Gary A Abrams ³, Anna M Rabil ², David C Landy ⁴

Affiliations + expand

PMID: 32340777 DOI: 10.1016/j.amepre.2020.02.013

(Hecht 2020)

Behavioral change is a hot topic



"Robin Sharma's books are helping people all over the world
lead great lives." —PAULO COELHO

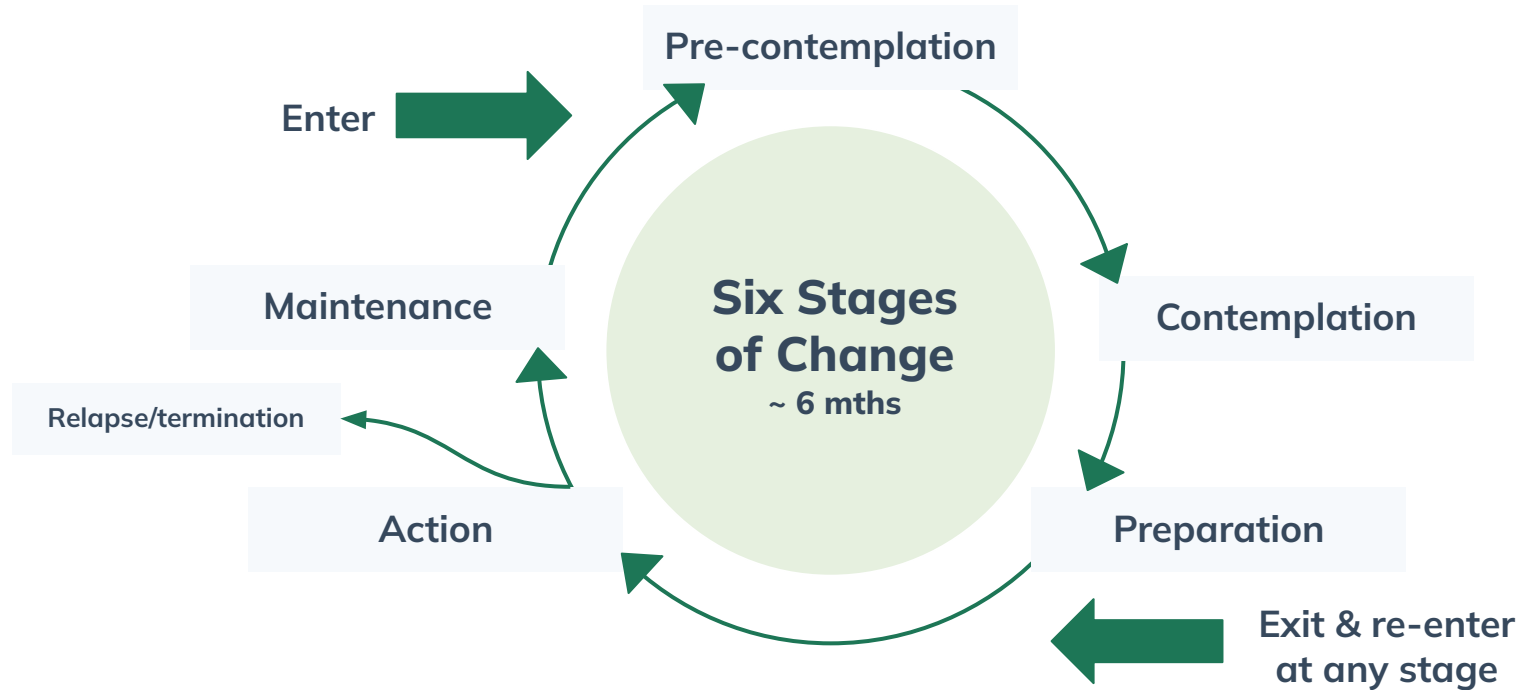
Research project

- Literature review
- Patient survey

Key findings: Literature review

- Behavioral change models

Transtheoretical model of change (Prochaska 1997)



Key findings: Patient survey

- Demographic and treatment info
- Behavioral change factors
- Patient needs and preferences

Patient survey demographics (n = 605)

87.3%

female

50.2 yrs

mean age

45.8%

household income
\$50-125k

71.2%

Bachelor's degree or
higher

75.5%

White ethnicity

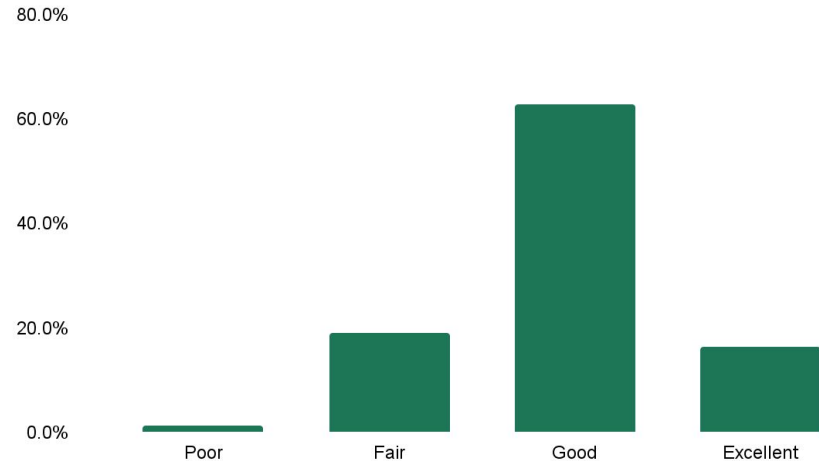
93.5%

English speaking
2.65% Spanish

7.5%

identified with a
disability

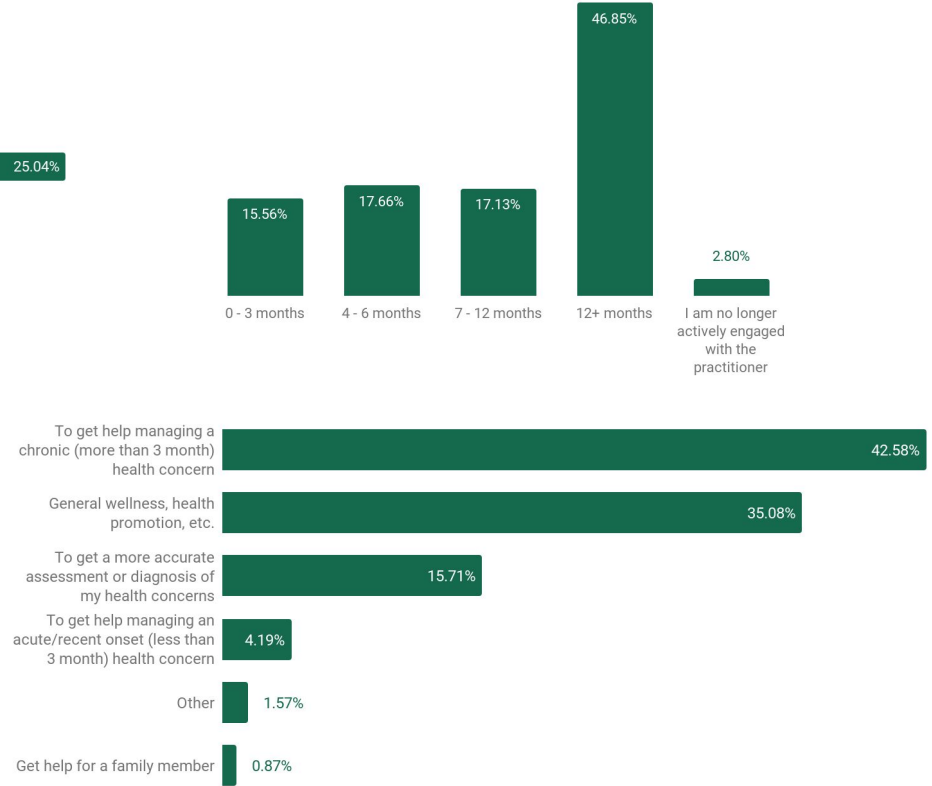
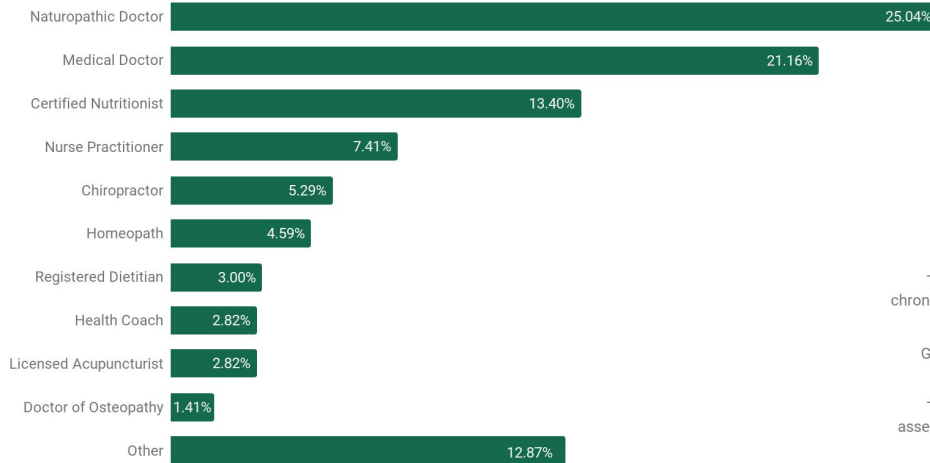
Self-perceived health status



Practitioner information

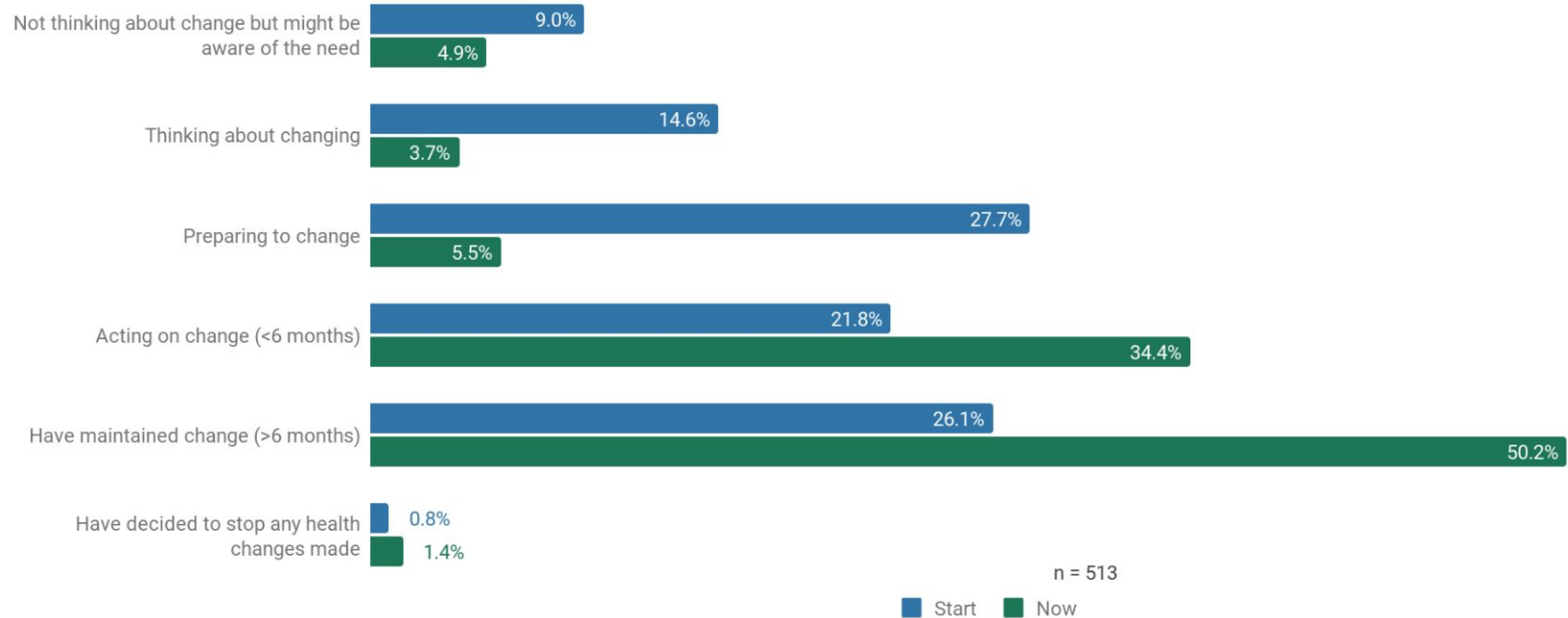
Time engaged and reason for visit (n = 572)

Type of practitioner seen (n = 567)



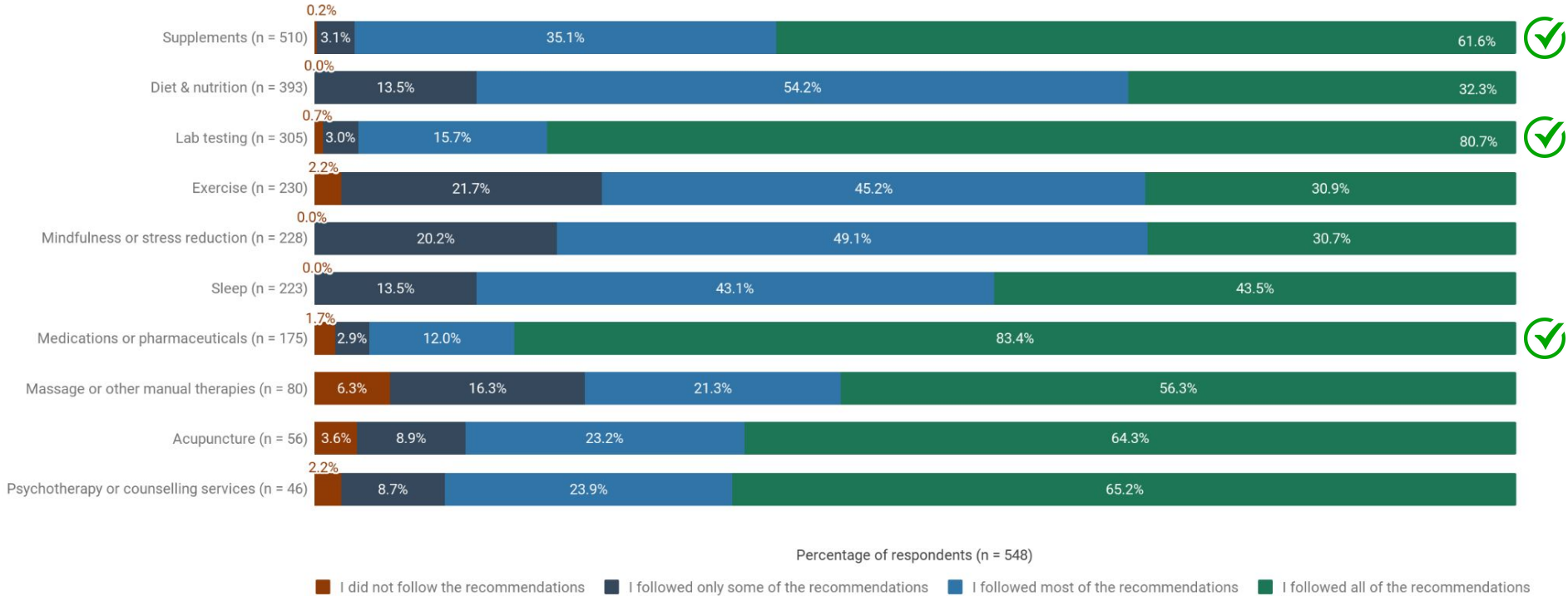
47% of patients have been working with their practitioner for more than 12 months.

Patient stages of change over time



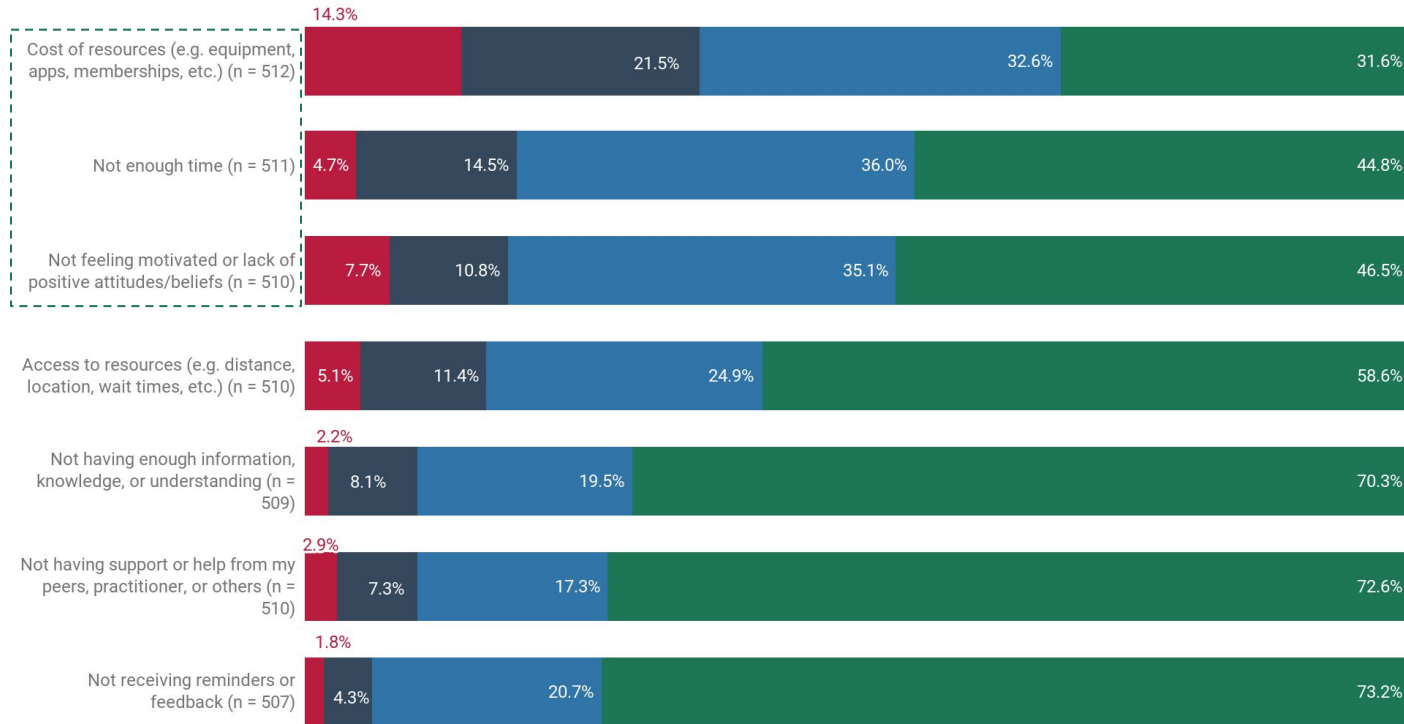
As patients engage with their practitioner over time (>6 months), their behaviors tend to shift from thinking about and preparing to change, to acting and maintaining change.

Self-reported level of treatment adherence



Patients felt that lifestyle-based treatments (nutrition, physical activity, and stress management) were harder to follow than other behaviors, such as supplement intake.

Commonly reported barriers to *behavioral change*



Percent of respondents (%) (n = 513)

Very affected Moderately affected Somewhat affected Not at all affected

Recap: What we've learned so far

- Behavioral change is hard, but it's necessary for long-term health.
- Patients need and want support beyond primary care, and it truly requires an individualized approach.
- Main barriers to BC are financial costs, time, and motivations/beliefs.
- Lifestyle components such as diet, exercise, stress, sleep are the hardest to change.

Strategies to support behavioral change

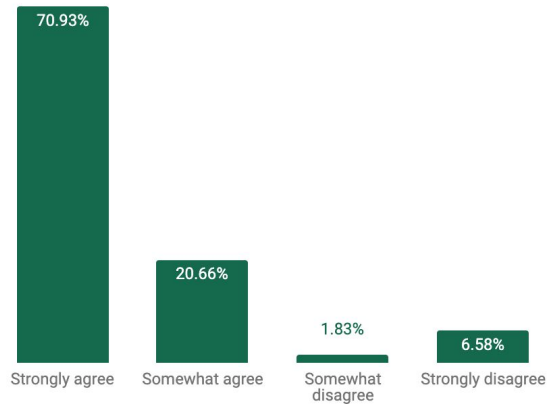
- Patient readiness, engagement, and motivation
- Patient empowerment and education
- Behavioral change techniques (BCTs)
- The role of technology

Measuring readiness & engagement

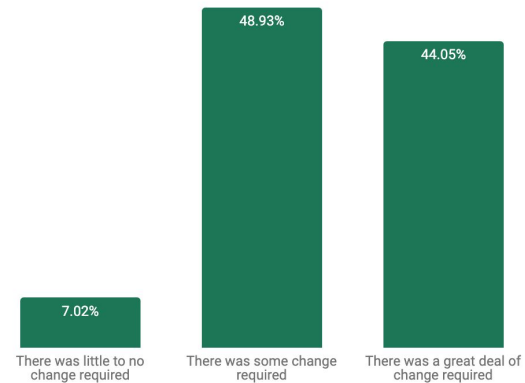
- Are they ready to change?
- Are they engaged in their treatment plan?
- Are they motivated?

Start by measuring patient readiness

- Assess the likelihood a patient will adopt a behavior by asking **open-ended questions** about motivations, attitudes, and beliefs about treatment.
- Practice strategies such as motivational interviewing to communicate **empathy** and a **shared partnership** in the patient's well-being.



Belief that tx will impact health (n = 547)



Amount of change required (n = 513)

URICA readiness to change questionnaire

Enter the questionnaire scores below.

Pre-contemplation (PC)		Contemplation (C)		Action (A)		Maintenance (M)	
1		2		3		8	
5		4	Omit	7		9	Omit
11		8		10		16	
13		12		14		18	
23		15		17		22	
26		19		20	Omit	27	
29		21		25		28	
31	Omit	24		30		32	
Total		Total		Total		Total	
Mean	Divide by 7	Mean	Divide by 7	Mean	Divide by 7	Mean	Divide by 7

Readiness score = Mean C + Mean A + Mean M - Mean PC

Readiness score: _____

Stage	Score
Pre-contemplation	≤8
Contemplation	8-11
Action	11-14
Maintenance	≥14



Patient readiness to change questionnaire

*Adapted from the University of Rhode Island Change Assessment Scale (URICA) (DíClemente, 1990) (McCannaughy, 1983)

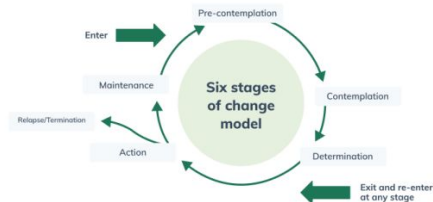
Background

Readiness to change is a measurement based on the Transtheoretical Model of Change, which has been widely applied to understanding the various stages involved with changing health behaviors. (Hashemzadeh, 2019) By measuring readiness to change, you and your practitioner will be able to better understand where you are at in your behavioral change journey and develop a treatment plan based on your specific needs and readiness. (Prochaska 1997)

The Transtheoretical Model of Change

The Transtheoretical Model of Change (TTM) outlines that behavioral change is made up of six progressive stages:

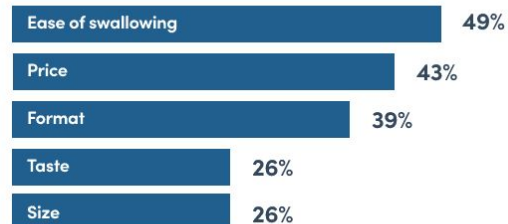
- 1. Pre-contemplation:** the individual is (un)aware of a problematic health behavior and is not considering change
- 2. Contemplation:** the individual is considering change
- 3. Determination (preparation):** the individual is planning to make change
- 4. Action:** the individual initiates change by performing the behavior within six months
- 5. Maintenance:** the behavior is continuously performed past six months
- 6. Relapse:** the individual regresses back into any one of the prior stages, which can occur at any point in time (or not at all) (Prochaska 1997)



Engage patients in their treatment plan

- Are they invested?
- Consider patient **preferences** and **values**
- Include patients in **decision making**
- Example: supplement selection

Consumer considerations for delivery form preference



*According to the 2020 CRN Consumer Survey on Dietary Supplements

Choose the **label claim(s)** (not third-party verified) that are important to you:

- Animal product-free
- Artificial colour-free
- Artificial flavour-free
- Artificial preservative-free
- Artificial sweetener-free
- Casein-free
- Corn-free
- Dairy-free
- Egg-free
- Fish-free
- Gluten-free
- Milk-free
- Mustard-free
- Non-GMO
- Peanut-free
- Rice-free
- Salt-free
- Sesame-free
- Shellfish-free
- Soy-free
- Sugar-free
- Tree nut-free
- Wheat-free
- Whey-free
- Yeast-free

Choose the **third-party certification(s)** (independently verified) that are important to you:

- Certified B Corporation®
- Certified Gluten-Free
- Certified Halal
- Certified Organic
- Certified Vegan
- Current Good Manufacturing Practices (CGMP)
- Friend of the Sea
- Global Organization for EPA and DHA Omega-3 (GOED)
- International Fish Oil Standards (IFOS)
- Informed-Choice
- Informed-Sport
- International Organization for Standardization (ISO)
- Kosher Check
- MOSA Certified Organic
- Non-GMO Project Verified
- National Sanitation Foundation (NSF)
- NSF Certified for Sport
- Underwriter Laboratories (UL)
- USDA Organic
- U.S. Pharmacopeia (USP)
- Vegan
- Vegetarian

Determine motivation level

- 3 key reasons why patients are not ready for change: (Hardcastle 2015)
 - They do not easily embrace the reasons they need to change.
 - They feel that change is too hard.
 - They believe the benefits of change do not outweigh the efforts of change.
- Focus on intrinsic motivation vs. extrinsic pressure. (Kwasnicka 2016)
- “Approach goals” vs. “avoidance goals”
- Positive improvements and small wins are huge motivators—another reason to keep treatment plans simple even if they seem “basic”.

Determine motivation level

- Consider the **treatment motivation questionnaire (TMQ-R)**.
- Practice **empathy** to build trust and openness.
- **17% improvement in adherence** when practitioners use **motivational interviewing** (Palacio 2016)

- **Ways to improve patient perception of practitioner empathy:** (Patel 2019)



Sitting vs. standing



Non-verbal emotion



Cues for empathy



Eye contact

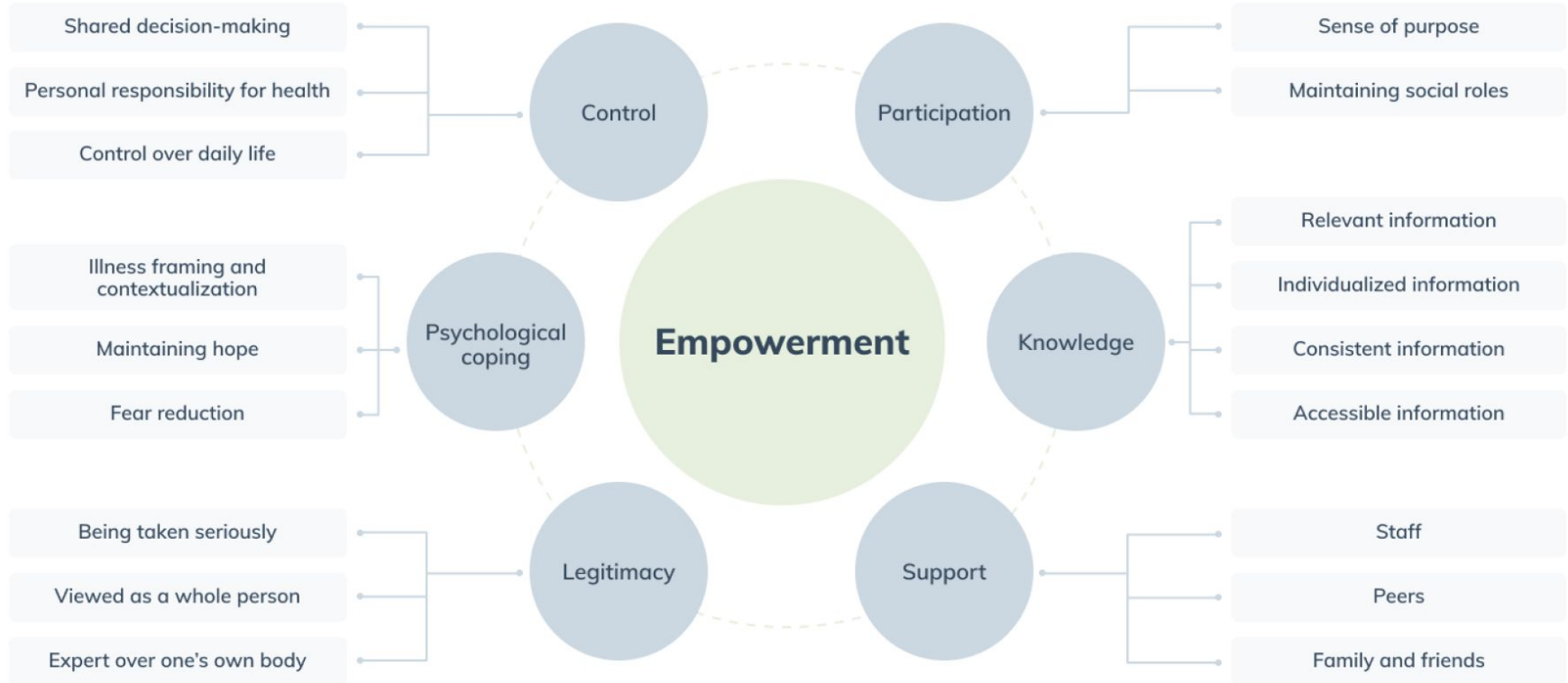


Validation

Patient empowerment


- Do they have what they need?
- Do they have enough knowledge?
- Is the treatment plan too complex?

Patient empowerment



Health empowerment scale (Azcurra 2014)

	(1) Strongly disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly agree
1. I know what part(s) of taking care of my health that I'm dissatisfied with.	1	2	3	4	5
2. I am able to turn my health goals into a workable plan.	1	2	3	4	5
3. I can try out different ways of overcoming barriers to my health care goals.	1	2	3	4	5
4. I can find ways to feel better about having health.	1	2	3	4	5
5. I know the positive ways I cope with health-related stress.	1	2	3	4	5
6. I can ask for support for having and caring for my health when I need it.	1	2	3	4	5
7. I know what helps me stay motivated to care for my health.	1	2	3	4	5
8. I know enough about myself as a person to make health care choices that are right for me.	1	2	3	4	5



Health empowerment questionnaire

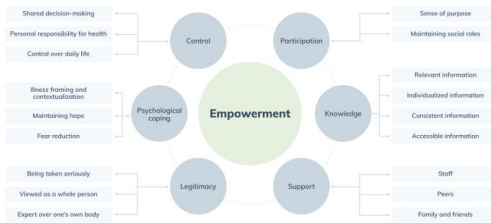
*Adapted from the Health Empowerment Scale (Azcurra 2014)

Background

Being empowered to take control of your health is one of the most effective ways to ensure that you are successful in your wellness journey. Empowerment is defined as:

- Your self-awareness of your role in influencing your health, relationships, and environments
- Your perception of having control or having self-efficacy (i.e., the belief in your own capacity to successfully improve your health behaviors)
- Your ability to participate with equal and valued involvement in decisions [\(Zimmerman 2000\)](#)

Health empowerment refers to your ability to manage your own health, involves making informed choices based on the information available to you, and focuses on fostering your own health experiences, desires, expectations, and beliefs. [\(Agner 2018\)](#) [\(Werbrueck 2018\)](#)



The diagram illustrates the components of Empowerment. At the center is a green circle labeled 'Empowerment'. Surrounding it are six blue circles: 'Control', 'Participation', 'Knowledge', 'Support', 'Legitimacy', and 'Psychological coping'. Each of these central circles is connected to a group of related concepts:

- Control** is linked to: Shared decision-making, Personal responsibility for health, and Control over daily life.
- Participation** is linked to: Sense of purpose and Maintaining social roles.
- Knowledge** is linked to: Relevant information, Individualized information, Consistent information, and Accessible information.
- Support** is linked to: Staff, Peers, and Family and friends.
- Legitimacy** is linked to: Being taken seriously, Viewed as a whole person, and Expert over one's own body.
- Psychological coping** is linked to: Stress training and contextualization, Maintaining hope, and Fear reduction.

[\(Agner 2018\)](#)

Measuring health empowerment can be helpful for understanding your current level of involvement with your health care plan and for your practitioner to understand how to best support you. Your practitioner may provide you with information or other tools to support making behavior changes designed to help increase your feelings of empowerment and improve your ability to self-manage your health. [\(Werbrueck 2018\)](#)

Provide health education

Example: content sharing
EHR platforms

Attach educational
documents to
treatment plans

The screenshot displays an EHR interface for a prescription. At the top, a circular profile icon with 'RB' and a green checkmark is next to the text 'Prescription for Ross B'. Below this is a text input field containing '+ Include a personal message' and an 'Attach' button with a document icon. A large blue arrow points from the 'Attach' button to the 'Attach document' modal window below. The modal window has a title bar 'Attach document' and a close button 'X'. It features a search bar 'Your library Fullscript content' and a list of documents:

- 28 Days of Wellness - Handout
December 14th, 2020
- 4Rs of Gut Healing - Handout
October 26th, 2020
- Allergies vs Cold/Flu - Infographic
October 26th, 2020
- Anti-Inflammatory Diet - Handout
May 29th, 2020
- Anti-Inflammatory Diet - Infogra...

To the right of the list is a dashed box containing a cloud icon with an upward arrow, the text 'Drag and drop attachments', 'or', and a 'Browse computer' button. A 'Done' button is located at the bottom of the modal. In the background, a prescription card for 'Cortisol Manager' is visible, showing 'Integrative Therapeutics', '30 tablets', '1 unit (\$24.40 each)', and '1 tablet with food 3 times a day'. There is also an 'Add products' button below the prescription card.

Keep treatment plans simple

- Non-adherence is often related to complexity of the treatment plan. ([Conn 2009](#))([Conn 2017](#))
- Example: consider **# of supplements** and **frequency of dosing**, and prioritize!

↑ adherence

13–36% via daily dose vs. twice/day

([Saini 2009](#))

22–41% via daily dose vs. three/day

([Saini 2009](#))

5% as a polypill vs. individual pills

([Lafebre 2015](#))



Vitamin C 1000mg
Klaire Labs
100 tablets ✓
1 unit (\$18.99 each) ✓
Please take 1 tablet, once / day ✎ ⓘ
with food

Liquid Vitamin D3
Ortho Molecular Products
30 Milliliters
1 unit (\$20.90 each) ✓
Please take 1 drop, once / day ✎ ⓘ
mixed with beverage or directly on tongue.

Zinc 15
Pure Encapsulations
60 capsules ✓
1 unit (\$11.20 each) ✓
Please take 1 capsule, twice / day ✎ ⓘ
in divided doses, with meals

Behavioral change techniques (BCTs)

- Goal setting and action planning
- Feedback and monitoring
- Reminders and ongoing communication

Behavioral change techniques (BCTs)



		*	*	*																		*							
		MoAs																											
		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
		Kn	Sk	SPRI	BaCa	Op	BaCo	Re	In	Go	MADP	ECR	SI	Em	BR	No	SN	Attb	Mo	Si	Ne	Va	FP	SLI	BC	GAB	Psv		
+	1.1. Goal setting (behaviour)		+	+	+				+	+			+		+						+			+		+		+	
+	1.2. Problem solving		+		+			+				+	+		+						+			+		+		+	
+	1.3. Goal setting (outcome)	+								+		+	+						+					+			+		
+	1.4. Action planning	+						+				+			+									+			+		
+	1.5. Review behaviour goal(s)									+														+			+		
+	1.6. Discrepancy between current behaviour ...		+			+		+		+		+			+						+		+		+		+		
+	1.7. Review outcome goal(s)	+				+				+		+									+			+		+		+	
+	1.8. Behavioural contract	+								+					+						+			+		+		+	
+	1.9. Commitment		+					+	+		+											+		+		+		+	
+	2.1. Monitoring of behaviour by others witho...					+		+					+								+			+		+		+	
+	2.2. Feedback on behaviour	+						+					+					+		+	+		+		+		+		
+	2.3. Self-monitoring of behaviour				+							+			+						+		+		+		+		
+	2.4. Self-monitoring of outcomes of behaviour											+			+						+		+		+		+		
+	2.5. Monitoring of outcome(s) of behaviour ...		+		+	+					+	+				+					+		+		+		+		
+	2.6. Biofeedback	+			+							+				+					+		+		+		+		
+	2.7. Feedback on outcome(s) of behaviour											+				+						+	+		+		+		
+	3.1. Social support (unspecified)		+	+									+								+		+		+		+		
+	3.2. Social support (practical)			+								+	+								+	+	+	+		+		+	
+	3.3. Social support (emotional)												+										+		+		+		
+	4.1. Instruction on how to perform behaviour	+	+	+	+									+		+	+				+	+		+		+		+	

■ Links
■ Non-links
■ Inconclusive
■ No evidence

Goal setting and action planning

- “Start low and go slow”: small, achievable goals build confidence and engagement
- **SMART goals** → **S**pecific, **M**easurable, **A**chievable, **R**elevant/Realistic, **T**ime-bound

Goal-setting worksheet

My goal: _____

Complete by: _____

Why is my goal important to me? _____

What potential barriers will I encounter? _____

How will I feel when I reach my goal? _____

S.M.A.R.T. Goal Checklist

- S- Specific
- M- Measurable
- A- Attainable
- R- Realistic
- T- Time-bound

Action plan

Action / task	Target date	Completed date



Do you relate to the statement below?

“I need some outside motivation. When I am feeling overwhelmed, it can be easy to give up.”

Yes

No

Do you relate to the statement below?

Let's better understand your current state of mind. At this moment, how motivated are you to reach your target weight?

I'm ready

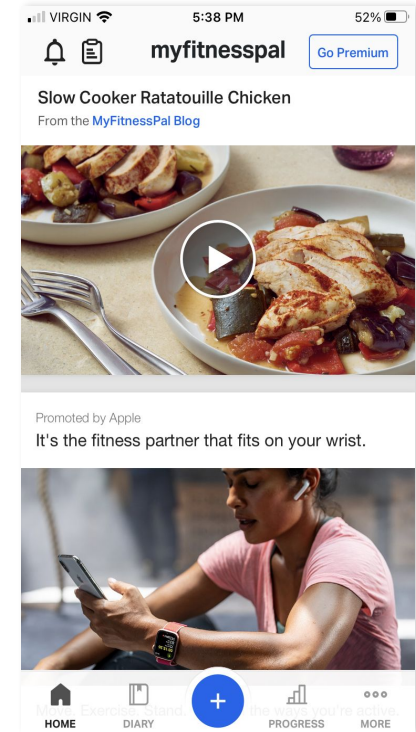
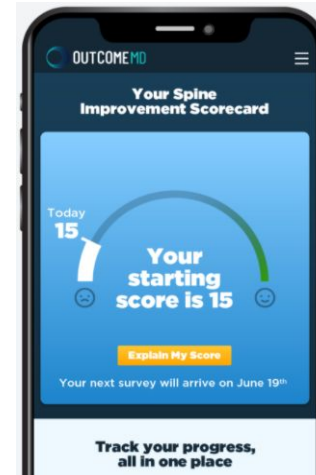
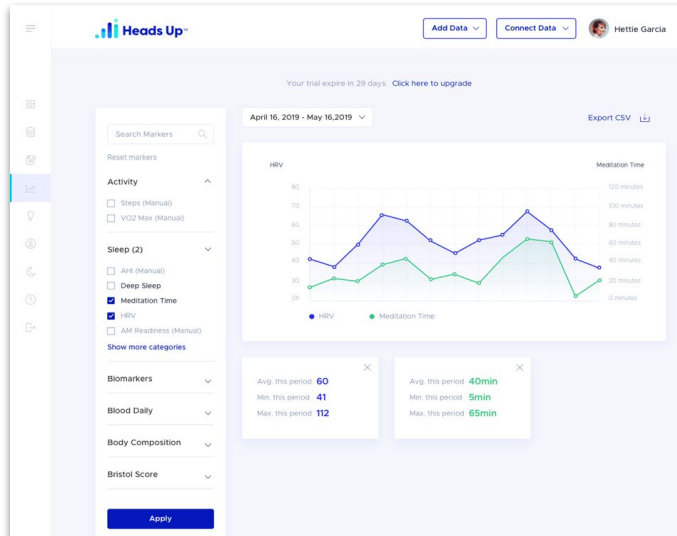
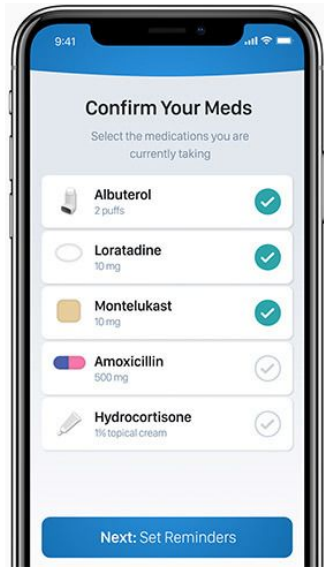
Feeling hopeful

I'm cautious

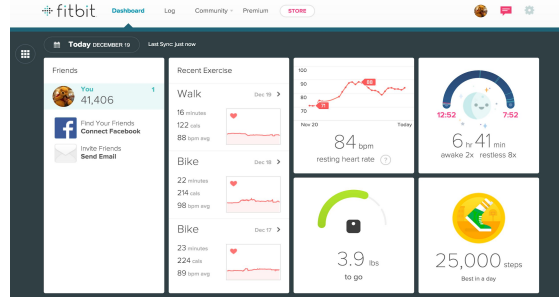
Taking it easy

Feedback, tracking, & monitoring

- Feedback strategies may improve adherence ~10–20% ([Demonceau 2013](#)) ([Seewoodharry 2017](#))
- Receive feedback from patients, track outcomes, labs results, etc.
- Possible integrations with EHRs, other apps, devices, etc.



Feedback, tracking, & monitoring

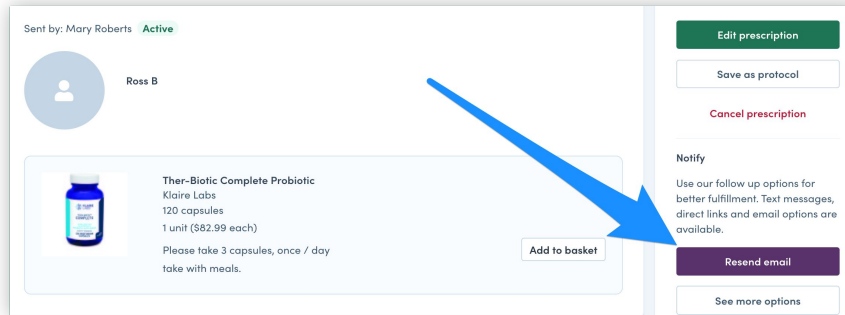


Reminders and ongoing communication

- Set clear expectations for frequency of visits.
- Offer and maintain regular communication throughout multiple channels.
- **18–22%** improved adherence from mobile device reminders and **10%** fewer missed appointments. ([Kashgari 2017](#)) ([Thakkar 2016](#))

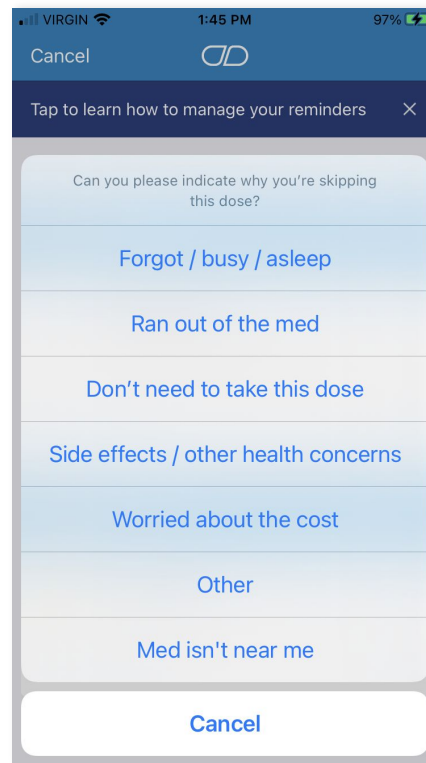
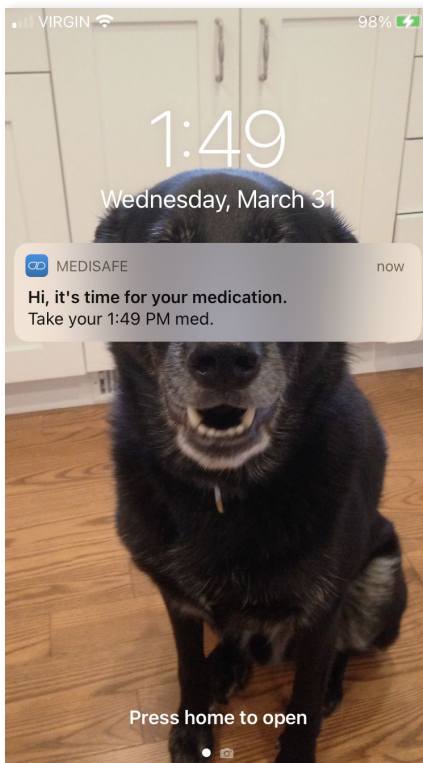
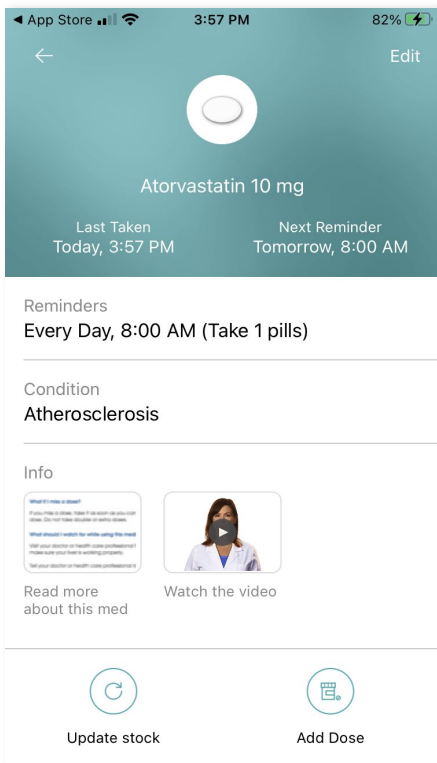


Automated refill reminders



E-mail and text message capabilities

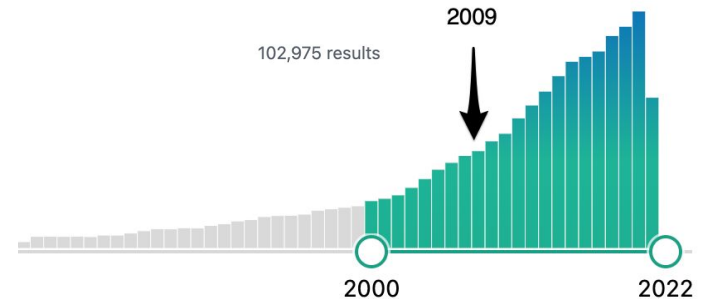
Reminders & ongoing communication



The future of technology

- **97%** of Americans own a cell phone (85% are smartphones). (Pew Research Center 2021)
- **60%** of the global population has access to internet; 92% connect through mobile devices. (Statista 2021)
- **60%** of smartphone owners use their device to track health behaviors. (Arigo 2019)
- **21%** of Americans use wearable health tracking devices. (Pew Research Center 2020)
- Over **50,000 apps** in Apple and Google Play stores related to BC support.
 - Whether free or paid, these do not always follow BCT theory/principles.
 - Most common for goal setting, self-monitoring, feedback, motivation, and community support

Around 82% of our patient survey respondents would consider using technology to support their BC wellness journeys.



The future of technology



Summary

- Behavioral change may be the greatest barrier to long-term health
- Top barriers are likely cost, time, motivation/beliefs, and knowledge
- Exploring these barriers with each patient can identify the most effective strategies
 - Think about readiness, engagement, motivation, & empowerment
- When possible, use evidence-based interventions (BCTs):
 - Goal setting and action planning
 - Feedback and monitoring
 - Reminders and ongoing communication
- Consider the role technology can play for your patients



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