A Patient-Centered Health Literacy – Psychosocial Support Intervention to Improve Medication Adherence for Veteran Patients with Diabetes

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Outline

- Background
 - -Health literacy and medication adherence
- The intervention protocol
- Development of the intervention materials
- Implementation of the intervention
- Preliminary data
- Discussion



"Drugs don't work in patients who don't take them."

– General C. Everett Koop Former US. Surgeon General

50% of patients don't take medicines as prescribed

Brown et al., 2011

\$290 Billion in avoidable healthcare spending

NEHI, 2009



125,000 deaths annually

Kane et al., 2003

65,000 amputations annually

Young-Hyman et al., 2012

Medication adherence

"Adherence is the extent to which a person's behavior [in] taking medication... corresponds with agreed recommendations from a health care provider"

(World Health Organization, 2003)

On average, 50% of medications for chronic diseases are not taken as prescribed.



https://www.niddk.nih.gov/healthinformation/communication-programs/ndep/healthprofessionals/promoting-medication-adherence-diabetes 4



Contributing factors of medication adherence

"Adherence is the extent to which a person's behavior [in] taking medication... corresponds with agreed recommendations from a health care provider"

(World Health Organization, 2003)

Adherence is a multidimensional phenomenon determined by the interplay of five sets of factors, termed "dimensions" by the World Health Organization





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Health literacy & medication adherence

- 2014 Systematic Review- 23 articles (Ostini et al, 2014)
 - Five reported clear evidence of relationship; Four reported mixed results; Fifteen reported lack of relationship
 - Suggested the influence of self-efficacy in the relationship
 - Possible U shaped relationship
 - Low HL non-adherent, moderate HL most adherent; high HL somewhat non-adherent
- 2016 Meta-analysis 220 articles (Miller, 2016)
 - <u>Positive association</u> between health literacy and medication adherence 14% higher risk of nonadherence among patients who have lower health literacy than among patients with higher literacy.

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Health literacy & diabetes medication adherence

 Improving medication adherence is one of the most effective approaches to improving the health outcomes of patients with diabetes. (Zullig et al., 2015)

• Enhancing diabetes medication adherence has occurred by improving diabetes-related knowledge, but behavior change often does not follow knowledge change. (Kim et al., 2010)



Prior work

• Health literacy does not have a direct impact on diabetes medication adherence (Huang et al., 2018)

• Indirectly influences medication adherence via other factors, such as self-efficacy, illness beliefs, and medication beliefs. (Shiyanbola et al., 2017; Huang et al., 2018)

 A comprehensive intervention that addresses all these psychosocial components may be a more effective strategy to improve medication adherence than an isolated approach.





Diabetes Educ 2014;40:581-604. 10

Health literacy-an integral part of adherence improvement programs

- Diabetes medicines
 - Address health literacy issues for patients with low health literacy before adherence interventions that address beliefs about diabetes medicines can work.
 - Low health literacy may create a barrier to communications that aim to address experience-based beliefs.



Adherence Intervention Programs

- Determine health literacy of every patient
 - Various measures available including Newest Vital Sign
- Develop intervention programs focused on health literacy and its related attributes



Nutrition Facts		
Serving Size	1/2 (cup
Servings per container		4
Amount per serving		
Calories 250	Fat Cal	120
	%	DV
Total Fat 13g	2	0%
Sat Fat 9g	4	0%
Cholesterol 28mg	1	2%
Sodium 55mg		2%
Total Carbohydrate 30	g 1.	2%
Dietary Fiber 2g		
Sugars 23g		
Protein 4g		8%
*Percentage Daily Values (DV) 2,000 calorie diet. Your daily v be higher or lower depending o calorie needs. Ingredients: Cream, Skim Sugar, Water, Egg Yolks, Brow	are based on a alues may on your Milk, Liquid n Sugar,	

READ TO SURJECT: This information is o	n the back ANSW	ER CORREC
of a container of a pint of ice crean	n. yes	no
1. If you eat the entire container, how man	ny calories will you eat?	
Answer: 1,000 is the only correct ans	wer	
If you are allowed to eat 60 grams of ca how much ice cream could you have?	rbohydrates as a snack.	
Answer: Any of the following is corre Half the container Note: If patient an ice cream would that be if you were to	ct: 1 cup (or any amount up to 1 cup), swers "two servings," ask "How much measure it into a bowl."	
 Your doctor advises you to reduce the a You usually have 42 g of saturated fate of ice cream. If you stop eating ice cream would you be consuming each day? 	amount of saturated fat in your diet. ach day, which includes one serving , how many grams of saturated fat	
Answer: 33 is the only correct answe	r	
 If you usually eat 2500 calories in a day, value of calories will you be eating if yo 	what percentage of your daily u eat one serving?	
Answer: 10% is the only correct answ	ver	
READ TO SUBJECT: Pretend that you are substances: Penicillin, peanuts, la	allergic to the following tex gloves, and bee stings.	+
5. Is it safe for you to eat this ice cream?		
Answer: No		
6. (Ask only if the patient responds "no" to	question 5): Why not?	+
Answer: Because it has peanut oil.		
nterpretation	Number of correct answers:	
Score of 0-1 suggests high likelihood (50% or Score of 2-3 indicates the possibility of limited	more) of limited literacy d literacy.	

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The Intervention Protocol



An Intervention Mixed Methods Design to improve medication adherence among adults with diabetes using a health literacy/psychosocial support intervention (Shiyanbola et al., 2019)





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Project ADHERE (ADdressing Health literacy, BEliefs, AdheRence, and Self-Efficacy) Intervention Manual

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Session 0 - Research staff meet with the participant and administer a survey to understand baseline psychosocial factors related to diabetes management.

Five domains of the survey measurement

Health literacy: Newest Vital Sign (Weiss et al., 2005)

- To assess participants' baseline level of health literacy
- To help the pharmacist prepare tailored information for participant counseling

Illness beliefs: Brief Illness Perception Questionnaire (Broadbent et al., 2006)

- To assess participants' illness beliefs about diabetes
- To guide pharmacists' counseling to address participant perception of diabetes



Domains of survey completed by patients

Beliefs about medicine: Belief about Medicines Questionnaire (Horne et al., 1999)

- To assess participants' concerns and necessity beliefs about their medicines
- To provide information during participant counseling to alleviate participants' concerns regarding medicines and reinforce participants' necessity of medicines

Self-efficacy for medication use: Self-efficacy for Appropriate Medication Use

Scale (Risser et al., 2007)

 To assess participants' self-efficacy for medication use and understand their possible barriers to medication use
 School of Pharmacy

Survey measure of medication adherence

Medication adherence: using the 11-item Adherence to Refills and Medication Scale - Diabetes (ARMS-D) and the 20-item Medication Adherence Reasons Scale (MAR-Scale) (Mayberry et al., 2013, Unni et al., 2014)

• To assess participants' medication adherence and understand their possible reasons for non-adherence to medication use



Scoring Sheet for Clinical Pharmacist



rticipant Number Date			Date
udi	o recording		
	Informatior	for Clinical Pharmacist	
	Health literacy		
0	~	9	6
	L	L	l
pic to icuss			No nee to
			discus:
	Medication Adherence (R)		
44		27.5	11
	1		k
	Self-efficacy		
13		26	39
	Medication Beliefs	1	
5	Concern (P)	15	25
25	Concern (R)	15	5
	I		l
	Illness beliefs		
10	Consequence (R)	5	0
0	Timeline (R)	5	10
0	Personal Control	5	10
0	Treatment Control	5	10
10	Identity (R)	5	0
10	Concern	5	0
0	Coherence	5	10
10	Emotional representation	5	0
	Most important factor(s) that caused	diabetes	
		3	
	1. Z.	0.	
	Medication Adherence		
	Logistic (R)		
в	Belief (R)	4	0
4	Remembering (R)	2	
4	Concern (R)	2	0
3	oundern py	1.5	0



Example tips for addressing illness beliefs

Utilization of the survey questions

CONSEQUENCES (After

identifying how strongly a participant believes diabetes affects their life, focus on addressing how they can take control of their life, cope with diabetes, and stay focused on their identified goal for wellness)



Discussion guide:

If a participant believes *diabetes severely affects his/her life:*

- Discuss how participants' beliefs about the way diabetes affects his/her job, family, relationships, community, etc. might impact their daily adherence to medicines and other self-care behaviors.
- Discuss the need to focus on their life/wellness goals, knowing that better diabetes management will allow them achieve their identified desired goal.

Example tips for addressing medication beliefs

Utilization of the survey questions

CONCERN BELIEFS (After

identifying how strongly a participant is concerned about the long term and dependence effects of their medicines)



Discussion guide: You can say:

- Diabetes medicines are not addictive.
- Sometimes you might be worried that your medicine could be harmful to you and not helpful, these concerns might even keep you from taking the medicines.
- You'll be more likely to have other diabetes problems if you don't take these medicines.
- This is why it's important to discuss your medication concerns with me so that we can try to address them and think of ways to help reduce the harmful effects of the medicine.

Example tips for increasing self-efficacy

Utilization of the survey questions

- Can you tell me how ... (reason for lack of confidence or taking medicines correctly) affects the use of your diabetes medicines every day?
- Then continue by saying: Thinking about your current life situation, what are some ways that we could address these issues/barriers?



<u>Discussion guide</u>: If the participant is expecting to be busy in the near future and/or having to take several medicines or away from home is a problem, say:

- It is important to get into a routine with your medication by taking your diabetes medicines at the same time every day. This will help you stay on track.
- What is your system of organizing your medicines?
 - How's that working for you?
 - What ideas do you have for improving your system?
- If you have a busy day or are going to be away from home, how could you help yourself and remember to take your medicines?

Development of the Intervention Materials



Health literacy principles emphasized

- Plain and simple language
 - Review by two health literacy experts
- Active voice
- Place information into sections
- Use of bullet points
- Use of white space
- Use of meaningful pictures to highlight text
- 6th grade reading level
- User testing with target population



Illness Perception Handout

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Diabetes Survival Tips

- Diabetes means you have too much glucose in your blood. Diabetes cannot be cured, but it can be controlled by eating healthy, exercise, and taking medications.
- Controlling diabetes is important. You can have serious health problems when your blood glucose is too high or too low. Problems like blindness, heart attacks and loss of a foot.







- Having diabetes is a life-long disease. Keeping your blood glucose in your target range can prevent or delay the health problems caused by diabetes. Most of the steps needed to take care of diabetes are things you can do yourself.
 - Use a meal plan.
- Be as physically active as possible.
- Take your medicines.
- Reach your blood glucose targets.
- Keep track of your blood glucose numbers using the results from your blood glucose testing and your A1C check.
- Most people with diabetes take medicines to control their blood glucose.
- Taking your medicines as prescribed is important to control your diabetes.
- Do not take more medicines or fewer medicines without talking to your prescriber. Call your pharmacist if you have any questions about your diabetes medicines.
- Injectable and oral medicines help control diabetes but can sometimes cause low blood glucose. This can happen if you:

■ Are too active ■ Skip a meal ■ Don't eat enough ■ Take too much medicine

- If you have any symptoms of low blood glucose, follow the Rule of 15 sheet.
- Always talk to your diabetes providers or healthcare team members if you have questions or before making any changes in your treatment plan.



Below-Knee Amputation

Illness Beliefs - Control

Diabetes Survival Tips

- Diabetes means you have too much glucose in your blood. Diabetes cannot be cured, but it can be controlled by eating healthy, exercise, and taking medications.
- Controlling diabetes is important. You can have serious health problems when your blood glucose is too high or too low. Problems like blindness, heart attacks and loss of a foot.







- You can have high blood glucose even if you don't feel sick or have any symptoms. That is why it is important to check your blood glucose as instructed.
- Having diabetes is a life-long disease. Keeping your blood glucose in your target range can prevent
 or delay the health problems caused by diabetes. Most of the steps needed to take care of diabetes
 are things you can do yourself.

■ Use a meal plan.

- Be as physically active as possible.
- Take your medicines.
- Reach your blood glucose targets.
- Keep track of your blood glucose numbers using the results from your blood glucose testing and your A1C check.



Diabetes Medicine Tips

- It is important to eat healthfully and exercise, but most people need diabetes medicines to help manage blood glucose/sugar.
- You should continue to take your diabetes medicines as prescribed because your diabetes has progressed beyond the point of being treated only with exercise and healthy eating



Taking Medicines

- If you take your diabetes medicines as prescribed, you'll be less likely to have other diabetes problems.
- Taking your diabetes medicines helps to protect you from short-term symptoms of high blood glucose/sugar, such as low energy.
- Medicines can help reduce the risk of serious health problems especially long-term diabetes complications such as: eye, heart, and kidney damage.

Side Effects

 Some side effects of diabetes medicines may or may not affect you, but get better with time.



Concerns

What are some of the concerns that you have about your diabetes medicines? Are you...

Worrying about your diabetes medicines?

Worrying about the long term effects of your diabetes medicines?

Worrying about becoming too dependent on your diabetes medicines?

- Feeling your diabetes medicines is a mystery to you?
- Feeling diabetes medicines disrupt your life?

If you have concerns about your medicines, contact the diabetes care team.



Call your diabetes care team at: (608) 280-7209 ©Copyright 2018 Shiyanbola This handout is not to be distributed, reproduced, or modified without permission from the authors

Diabetes Medicine Taking Tips

- You can manage your own health!
- However, if you have concerns about taking your medicines correctly or you face issues that make taking medicines hard, here are some ways to help:

Tips for remembering to take your medicines:

- Take your diabetes medicines at the same time every day to stay on track.
- Keep your pill box or injection medicine where you can see it. For example, by the night stand or TV remote



- Time your diabetes medicines with a chore or daily routine. For example, when you eat a meal or brush your teeth.
- Write yourself a note and post it somewhere you look often. For example, the bathroom mirror or refrigerator door.
- Keep your medicine bottles near something you see every day. For example, your toothbrush.
- Set an alarm on your phone or alarm clock to help you remember.
- Ask your spouse/family member/neighbor/friend to remind you.

Tips for staying on track with your medicines when life gets busy or routines change:



- Have a plan for how to keep track of your medicines when something changes in your routine, such as on the weekend or if traveling.
- It takes most people 4-6 weeks to get into a new habit, so you need to figure out a way to remind yourself of the new routine.
 - For example, it may work to pick a place where you'll always keep your medicines, like a pill box or kitchen cabinet.

Concerns or Questions

Contact the VA Diabetes care team for questions or if you're not sure how or when to take the medicines. We can work with you to find ways to help keep you on track to being healthy and reaching your health goals.



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Self-Efficacy Handout

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remembering

with

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Preliminary data



Sample characteristics (n=9)

Demographics

- Mean age = 57 years
- Male = 100%
- White/non-Hispanic = 100%
- Education level:
 - 33.3% High school graduates
 - 44.4% Trade school/some college
 - 22.3% Associates/Bachelor's degree

Clinical factors

- Mean adherence levels (ARMS-D) = 15.4 (Scale of 11-44)
- 67% forget to take diabetes medicines, "some of the time"; 56% miss taking diabetes medicines when they are careless
- MAR-Scale: Over the last 7 days, how many days were you able to take your diabetes medicine by mouth exactly as prescribed?

5 days = 22.2%; 6 days = 22.2%; 7 days = 55.8%

• Mean (baseline) hemoglobin A1c = 9.4



Most frequently identified barriers to medication adherence

- Medication Beliefs:
 - 56% of participants identified Concern Beliefs "...my diabetes disrupts my life."
- <u>Illness Beliefs</u>:
 - 89% of participants reported that diabetes greatly affects their life
 - 89% reported being concerned about their diabetes with 4 patients being "extremely concerned"
 - 56% of participants reported not feeling they had much or any control over their diabetes
 - 33% of participants reported that their illness affects them emotionally
- Reasons for Medication Nonadherence:
 - Remembering "I would have taken it, but simply missed it" "I would have taken it, but missed because of busy schedule/change in routine; "I would have taken it, but have difficulty remembering things in my daily life;" "I do not consider taking this medicine as a high priority in my daily routine."

Most frequently discussed areas to focus on based on patient decision-making

- Personal control
 - How much control the participant feels they have over their illness
- <u>Concerns</u>
 - -Concerns about illness/diabetes
 - -Diabetes medication disrupts life
- <u>Consequences</u>
 - -How much diabetes affects their lives



Case Study

- Participant in intervention group
- Completed session 1 (face-to-face) with clinical pharmacist
 - identified challenges with remembering to take medication while at work
 - Reported omitting doses at home
 - Reported missing 30 doses of insulin in a 2-week period
- Completed sessions 2 & 3 (phone calls with clinical pharmacist)
 - Reports missing only 4 doses of insulin in 2-week period at work and no missed doses at home



Discussion

- The first longitudinal randomized controlled trial which aims to improve participants medication adherence by addressing various psychosocial and health literacy factors simultaneously.
- The ADHERE intervention builds self-efficacy and addresses negative beliefs about medicines and diabetes.



Thank you!



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https://twitter.com/ShiyanbolaLab



Activity

- How would you implement this intervention in a different setting?
- What aspects of the intervention would work/not work?
- What barriers/challenges might you encounter?

