Barriers and Potential Solutions to Improve Medication Adherence Amongst Latino Patients with Diabetes at FQHCs in Los Angeles, CA

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Introduction

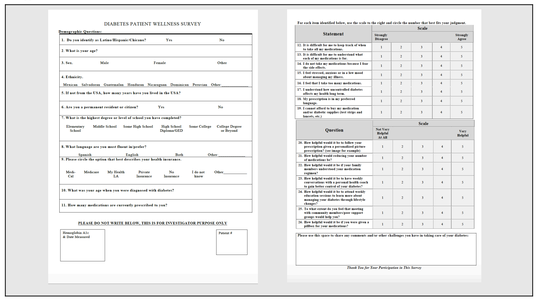
Diabetes is a leading cause of death in Latinos in the United States [1] and the leading cause of adult-onset blindness and kidney failure [2]. However, complications and death from diabetes are preventable outcomes. There are seven self-care behaviors that can prevent complications from diabetes [3]. Some of these behaviors are medication adherence, healthy coping and monitoring glycemic control. [3] Medication adherence is a significant challenge within Latino patients with diabetes [4,5]. Interventions have been utilized to apply self-care behaviors but rarely with the sole focus of addressing medication adherence [7,8]. Thus, our study investigated three aspects of medication adherence in Latino patients: (1) demographics; (2) medication barriers (psychosocial, cognitive, disease experience) and (3) the impact of these factors on self-identified interventions.

Methods

Our cross-sectional study surveyed 106 adult patients in four federally qualified health clinics in Los Angeles. The clinics include: Family Care Specialists, Clinica Romero Marengo, Universal Community Health Center and Edward R. Roybal Comprehensive Health Center.

Clinic: Clinica Monseñor Oscar A. Romero-Marengo Location: Boyle Heights/ East Los Angeles, CA	Clinic: Family Care Specialists Location: Boyle Heights/East Los Angeles, CA	Clinic: Edward R. Roybal Comprehensive Health Center Location: East Los Angeles, CA	Clinic: Universal Community Health Center Location: South Los Angeles, CA

- The patients self-identified as Latino/Chicano/Hispanic, have diabetes >6 months and are taking medications for diabetes.
- Our 26-question survey had three sections: (1) demographics, (2) barriers to medication adherence and (3) potential interventions. The questions were in Likert scales, multiple choice, dichotomous and open-ended format. HgbA1c data was also collected. The surveys were conducted anonymously in Spanish or English depending on the patient's stated preferred language. An image of the paper survey is below.



- The data is being analyzed using SPSS software. This study was approved by the University of Southern California Institutional Review Board.
- In this analysis, we are looking at pertinent patient responses based on clinic site.

Results

Demographic Data:

Table 1. Age Range

	Overall (N=106)	CRM (N=27)	FCS (N=30)	RCHC (N=19)	UCHC (N=30)
18-44	4	1	0	0	3
45-64	66	22	15	15	14
>64	36	4	15	4	13

Table 2. HgbA1c

	Overall (N=106)	CRM (N=27)	FCS (N=30)	RCHC (N=19)	UCHC (N=30)
<7.5	42	9	14	4	15
≥7.5	64	18	16	15	15

Table 3. Citizen or Resident

	Overall (N=106)	CRM (N=27)	FCS (N=30)	RCHC (N=19)	UCHC (N=30)
Yes	80	13	28	15	24
No	23	11	2	4	6
Decline to Respond	3	3	0	0	0

Table 4. Years with Diabetes

	<10	>10
Overall (N=106)	47	59
CRM (N=27)	17	10
FCS (N=30)	08	22
RCHC (N=19)	7	12
UCHC (N=30)	15	15

Table 5. Number of Prescribed Medications

	<5	>5
Overall (N=106)	48	58
CRM (N=27)	14	**13**
FCS (N=30)	12	18
RCHC (N=19)	6	**13**
UCHC (N=30)	16	**14**

Key:
FCS: Family Care Specialists
CRM: Clinica Romero-Marengo
RCHC: Roybal Comprehensive Health Center
UCHC: Universal Community Health Center

Results Continued:

Select Response Frequencies and Outcome Variables:

Table 6. Cost Barrier: **I cannot afford to buy my medications and/or diabetic supplies (test strips, lancets, etc).** Means to the Likert scale responses; with **1** corresponding to 'Strongly Disagree' and **5** corresponding to 'Strongly Agree.'

	Mean:	Standard Deviation:
Overall (N=106)	2.64	1.84
CRM (N=27)	3.21	1.97
FCS (N=30)	2.1	1.47
RCHC (N=19)	1.53	1.31
UCHC (N=30)	3.33	1.81

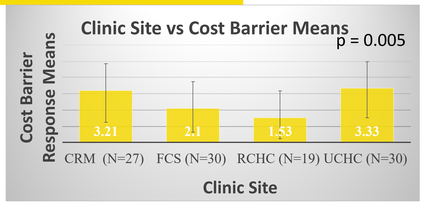


Figure 1. **Clinic Site vs Cost Barrier (I cannot afford to buy my medications and/or diabetic supplies (test strips, lancets, etc)).** ANOVA was conducted between clinic sites, showing a statistically significant difference (p=0.005) between responses to cost barrier, demonstrating that there was a difference patient's ability to afford their medications between sites.

Table 7. Cognitive Intervention 1: **'How helpful would it be to follow your prescription if given a personalized picture prescription?** (Means to the Likert scale responses; with **1** corresponding to 'Not Very Helpful At All' and **5** corresponding to 'Very Helpful').

	Mean:	Standard Deviation:
Overall (N=106)	3.99	1.53
CRM (N=27)	4.70	1.07
FCS (N=30)	3.67	1.65
RCHC (N=19)	1.68	1.47
UCHC (N=30)	4.23	1.45

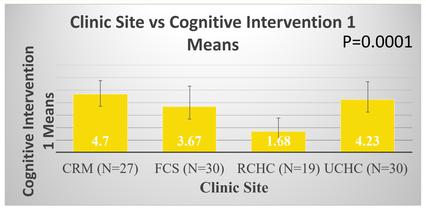


Figure 2. **Clinic Site vs Cognitive Intervention 1 (How Helpful Would It Be To Follow Your Prescription If Given A Personalized Picture Prescription.** ANOVA was conducted between clinic sites, showing a statistically significant difference (p=0.0001) between responses to cognitive intervention 1, demonstrating that there was a difference patient's preference for this intervention between sites.

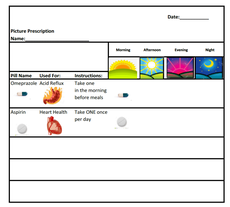


Figure 3. Example of a personalized picture prescription

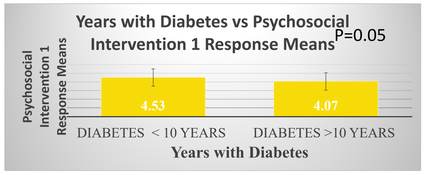


Figure 4. **Years with Diabetes vs. psychosocial intervention 1 (how helpful would it be if your family members understood your medication regimen?)** Independent T-tests were conducted Between patients with ≤10 yrs with diabetes and >10yrs with showing a statistically significant difference (p=0.05) between responses to psychological intervention 1, indicating that patients with less than years with diabetes would find it more helpful if their family members understood their medication regimen.

Table 8. Psychosocial Intervention 1: **'How helpful would it be if your family members understood your medication regimen?'** (Means to the Likert scale responses; with 1 corresponding to 'Not Very Helpful At All' and 5 corresponding to 'Very Helpful').

	Mean:	Standard Deviation:
Overall (N=106)	4.27	1.24
CRM (N=27)	4.33	1.36
FCS (N=30)	3.90	1.35
RCHC (N=19)	3.95	1.31
UCHC (N=30)	4.77	0.77

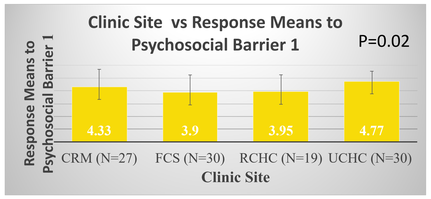


Figure 5. **Clinic site vs. psychosocial intervention 1 (how helpful would it be if your family members understood your medication regimen?)** ANOVA was conducted between clinic sites, showing a statistically significant difference (p=0.02) between responses to psychosocial intervention 1, demonstrating that there was a difference in perceived benefit between patients at each clinic site when asked if it would help if their family members understood their medication regimen.

Discussion

Through this analysis we can make the following deductions:

•**Figure 1**. suggests that patients at different sites have varying challenges when it comes to affording their medications. Patients at UCHC had the highest mean (3.33) for this response whereas patients at RCHC had the lowest mean (1.53). This tells us that patients at UCHC think that they cannot afford to buy their medications or diabetic supplies more that patients at RCHC. The next step would be to compare the types of health insurance each group of patients has to see how it correlates with this response.

•**Figure 2**. indicates that patients at some of the clinics found the Cognitive Intervention 1 (*How helpful would it be follow your prescription if given a personalized picture prescription?*) more helpful than others. For example, patients at UCHC (mean: 4.23) and CRM (mean: 4.7) had the highest means while patients at RCHC (mean: 1.68) had the lowest mean for this response. Interestingly, the clinics with the highest means had an even distribution of patients taking five or less medications vs more than five medications. While the clinic with the lowest mean had a higher proportion of patients taking more than five medications (Table 5). This leads us to ask if there is a threshold of number of prescribed medications for which this intervention would be most beneficial.

•**Figure 4**. indicates that there is a statistically significant (P=0.05) difference in preferences for the proposed psychosocial intervention 1 (How helpful would it be if your family members understood your medication regimen?) between patients who have had diabetes for 10 years or less vs patients how have had diabetes for over 10 years. Patients who have had diabetes for less years show a preference for this intervention. Similarly, **Figure 5** indicates that there are differences in preferences amongst patients at the various clinic sites for the same proposed intervention with UCHC and CRM having the highest means. Looking back at Table 4, we can see that UCHC and CRM have higher proportions of patients with more recent diagnoses of diabetes compared to the other sites. These findings may suggest that while family support is an important cultural component in Latino patients, it may be especially important in the early years after diagnosis.

Conclusions and Future Aims

Our findings suggest that prior to implementing a medication adherence intervention at any site, there may be an added benefit in surveying the patient population to assess their specific demographic characteristics and needs in order to best cater the intervention. Even in Latino populations, no intervention is a one-size-fits all and the first step in the application of any successful medication adherence intervention is to know the target population's diverse needs and background. Moving forward, to design a well structured intervention, we plan to survey the literature to learn about similar interventions and model ours based on our findings.

References

[1] https://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2016/diabetes-aag.pdf Date Retrieved 03/13/2017.
[2] https://www.cdc.gov/chronicdisease/resources/publications/aag/diabetes.htm Date Retrieved 08/05/2017
[3] https://www.diabeteseducator.org/patient-resources/aade7-self-care-behaviors. Date retrieved 03/13/2017.
[4] Polonsky, William, Henry, Robert. "Poor medication adherence in type II diabetes: recognizing the scope of the problem and its key contributors." *Patient Preference and Adherence.* 2016; 10: 1299-1307.
[5] Mayberry, Lindsay Satterwhite, Bergner, Erin M, Chakkalakal, Rosette J., Elasy, Tom A., Osborn, Chandra Y. "Self-Care Disparities Among Adults with Type 2 Diabetes in the USA." *Curr Diab Rep* (2016) 16: 113 DOI 10.1007/s11892-016-0796-5
[6] Fernandez,Quan, Moffet, et al. " Adherence to Newly Prescribed Medications Among Insured Latino and White Patients with Diabetes." JAMA Internal Med (2017); 177(3):371-379
[7] Wolf, Davis, Curty, et al. "A Patient-Centered Prescription Drug Label to Promote Appropriate Medication Use and Adherence." *Journal of General Internal Medicine.* (2016) 31(12):1482–9 DOI: 10.1007/s11606-016-3816-x
[8] Willard-grace, Chase, Hessler, et al. "Health Coaching By Medical Assistants to Improve Control of Diabetes, Hypertension, and Hyperlipidemia in Low-Income Patients: A Randomized Controlled Trial" *Ann Fam Med* (2015); 13:130-138 doi: 10.1370/afm.1768

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Our Team