

Outcomes of an Effectiveness Trial to Address Health Disparities in Black Youth with Type 1 Diabetes

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Disparities in Health Outcomes for Youth of Color with Type 1 Diabetes

Hispanic and Black children more likely to have suboptimal glycemic control

Hispanic and Black children less likely to initiate and/or sustain diabetes technology use

Evidence-based interventions to address such disparities and promote health equity are lacking



What is Parental Monitoring?

- Parenting behaviors that involve information seeking about a youth's daily activities as well as direct supervision and oversight of those activities
- Related to parenting behaviors like discipline and setting limits



Parental monitoring studies in the general child development literature

- Low levels of monitoring are related to:
 - early initiation of sexual activity/ risky sex
 - delinquent behavior
 - problematic use of alcohol and drugs
 - poor academic outcomes
- Shown to be just as important as affective aspects of parenting such as warmth and support
- Particularly important to health outcomes of youth living in high-risk contexts, such as disadvantaged neighborhoods

Does parental monitoring predict *illness management* and *health outcomes* in youth with *diabetes*?

Unknown, no studies

Parental Monitoring Research:

Two cross-sectional studies enrolling families of adolescents with T1D

■ N=99 Families

Table 1
Demographic characteristics of study participants (n = 99)

	%	M (SD)
Youth age		14.8 (1.7)
Parent Age		43.2 (6.9)
Annual family income (dollars)		\$43,625 (26,024)
Youth gender		
Male	52	
Female	48	
Caregiver gender		
Male	22	
Female	78	
Number of parents in home		
Two parents	65	
Single parent	35	
Family ethnicity		
Caucasian	47	
African American	36	
Other/missing	17	
Duration of diabetes in years		5.7 (4.2)
HbA1c		9.1 (2.3)
Insulin regimen		
2-3 injections/day	24	
4 or more injections/day	52	
Insulin pump	24	

■ N=267 Families

Table 1 Sample socio-demographic characteristics (N = 267)

Variables	Mean (SD)	N (%)
Adolescent age	14.62 (1.96)	
Adolescent gender		
Female		133 (49.8)
Male		134 (50.2)
Parents' age	42.92 (7.35)	
Parent's gender		
Female		215 (80.8)
Male		51 (19.2)
Minority		
African American		95 (35.7)
White/other		171 (64.3)
Family structure		
Single-parent		83 (31.1)
Two-parent		184 (68.9)
Parent's education		
No college		107 (40.7)
Some college		156 (59.3)
Employment status		
Unemployed		86 (32.3)
Employed		180 (67.7)
Family annual income		
<\$30 000		83 (32.5)
≥\$30 000		172 (67.5)

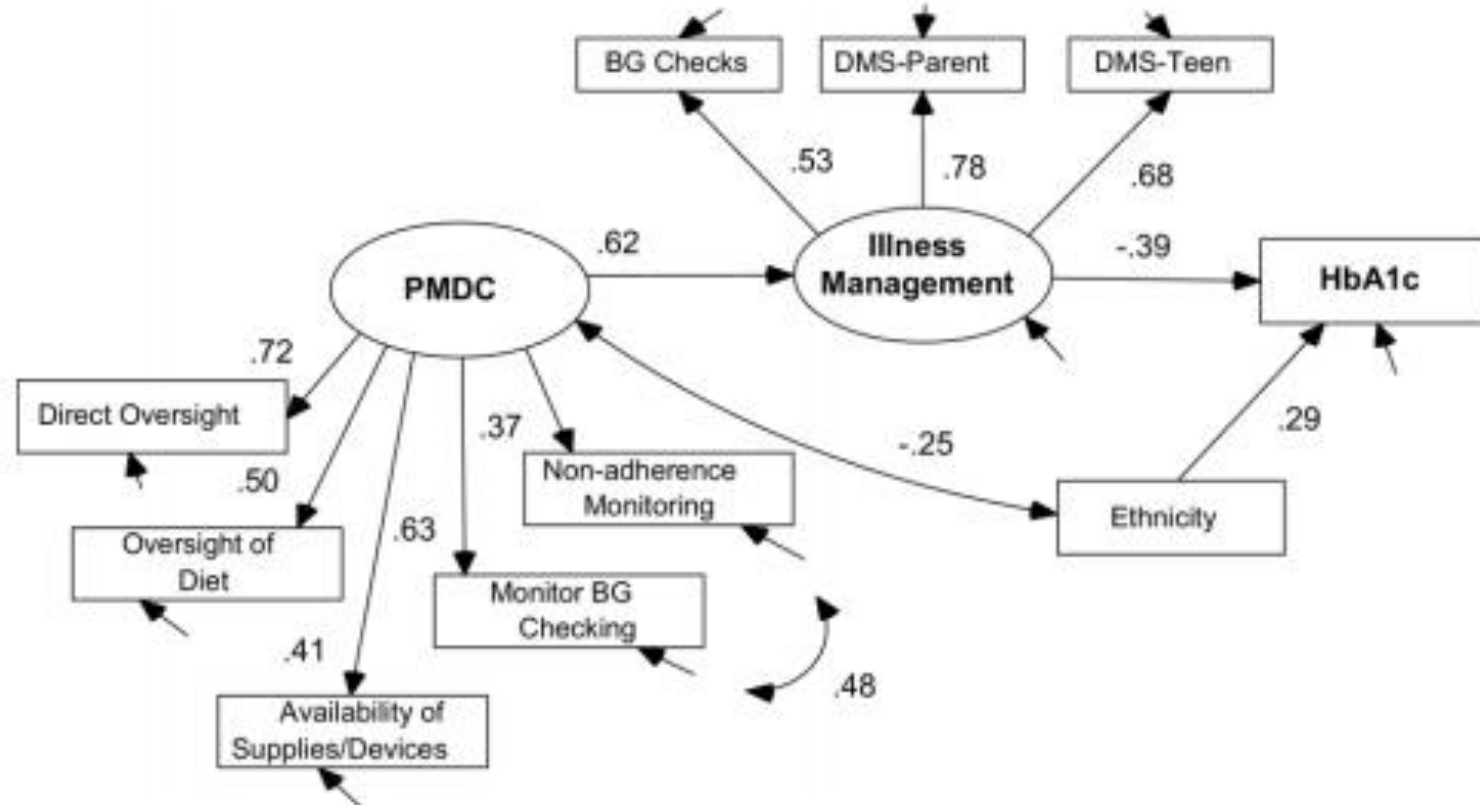


Figure 1. Final SEM model results showing standardized path coefficients of relationship between parental monitoring of diabetes care (PMDC), illness management, and metabolic control (HbA1c). All paths are significant, $p < .05$.

Study Design

- Multicenter Effectiveness-Implementation Study
- Randomized Clinical Trial
 - 4 pediatric diabetes clinics in Chicago, 3 in Detroit
- Eligibility
 - Young Adolescents aged 10-15
 - Primary Caregiver willing to participate
 - Self-Identify as Black
 - 6 months post dx with type 1 diabetes



Evidence-Based Intervention: The 3Ms



- Used with primary caregivers of young Black adolescents
- Daily parental supervision of diabetes care
- eHealth platform
- Delivered using Motivational Interviewing principles
- Three sessions lasting 10-15 minutes

Characteristics of the Innovation/ Intervention Promoting Health Equity

- Psychoeducational content developed with primary caregivers of Black adolescents with type 1 diabetes
 - Language adapted based on parent input
 - Black researchers vetted content and language
- Used videoclips showing people of color
 - Black health care provider gave advice
 - Black parent provided testimonial

Recipients: Patient Factors Promoting Health Equity

- IS question: use of diabetes clinic-based delivery or mHealth approach?
 - Pro: Clinic delivery could circumvent barriers to Internet access
 - Con: Clinic delivery could be affected by barriers to clinic attendance

Decision: Deliver 3Ms sessions at any diabetes clinic visit during a 12 months window

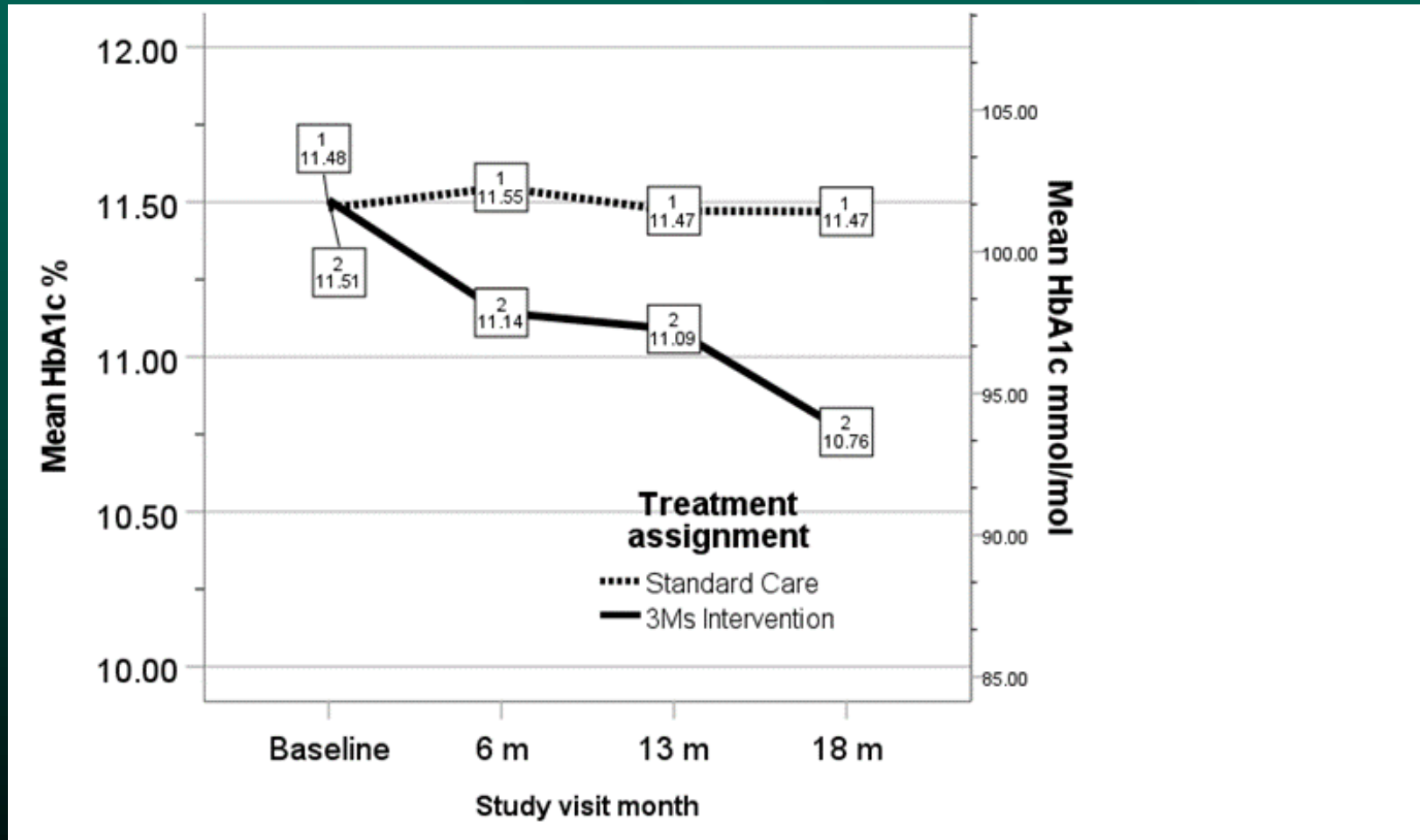


Sample Demographics (N=149)

- Median Family Income = \$25,000 (USD)
- Mean HbA1c $11.5\% \pm 2.7\%$
(102 ± 29.7 mmol/mol)
- 58% female, 42% male
- Mean youth age = 13.4 ± 1.7 years
- Mean duration diabetes = 5.8 ± 3.9 years
- *Recruitment rates were high- only 27% of families approached declined to participate*



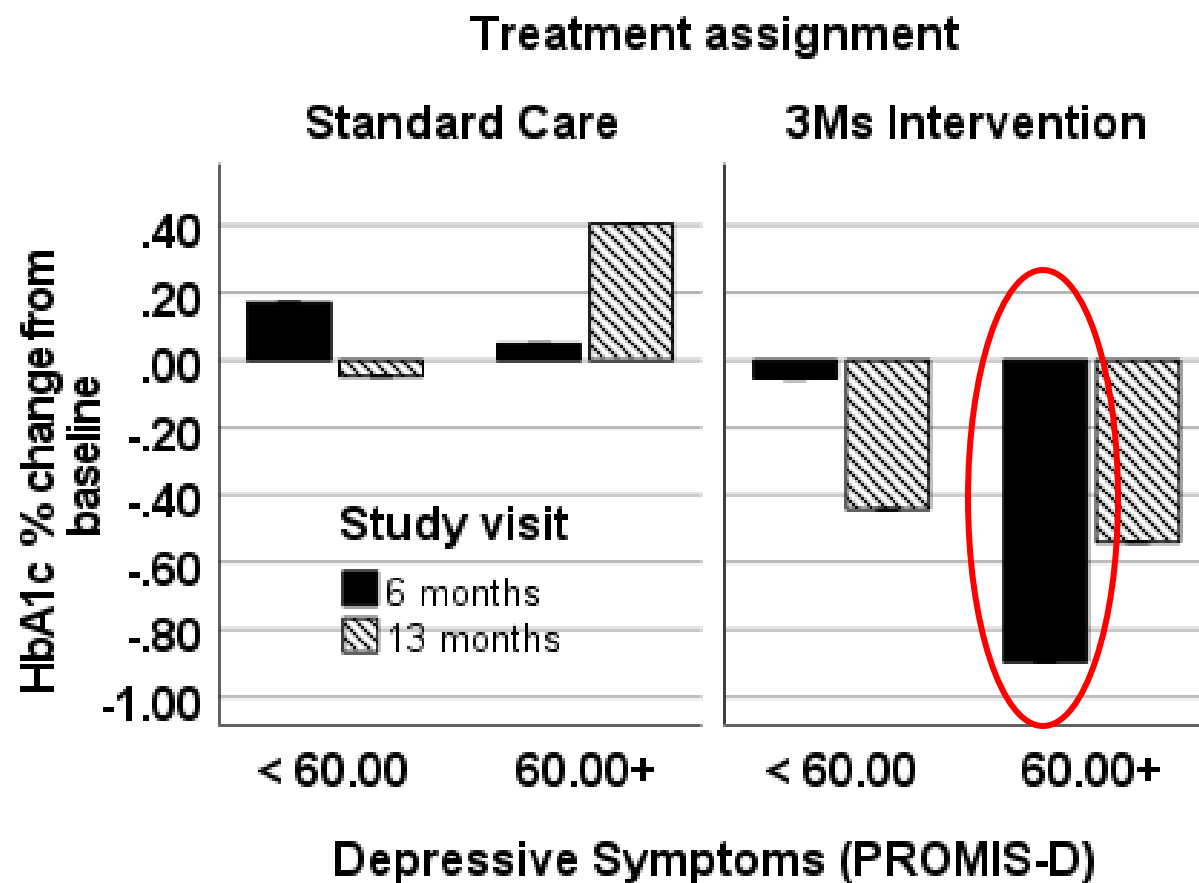
Intervention Effects on Primary Endpoint



Linear Mixed Effects
Regression Model with
Planned Contrasts

Significant Group x Time
interaction at 6-month
and 18-month
follow-up ($p < .05$)

HbA1c decreased
by 0.74%
at 18-month follow-up
in intervention group



Intervention youth with higher baseline depression scores had more improvement

Decrease in HbA1c of 0.89% ($P=.012$) at 6-month follow-up

Number of 3Ms Sessions (Dose) Delivered

- Dose was evenly distributed in the intervention group
 - 36% received one session, 36% received two sessions, 28% received three sessions
- Effects of dose on health outcomes
 - Effect of one session versus more than one session was significant at 18-month follow-up
 - HbA1c declined by 0.70% vs 0.31%, $p < .05$

Qualitative Interviews-Parents (N=21)

Social Impact		
Caregiver- Youth Collaboration	Caregivers described how their teamwork with their teen improved after the intervention	<i>“She's more comfortable with checking it... [it] seems like since I'm doing it with her with the 3Ms, she's getting used to it”</i>
Shared Experiences	Caregivers related to the caregiver depicted in the peer testimonial	<i>“It's always good to hear something from another parent just to see if you guys experienced the same thing or are going through the same thing.</i>
Teen Impact	Caregivers noticed their teens becoming more proactive in completing their diabetes management tasks	<i>“I have seen a change in how he approaches [checking blood sugar levels] a lot of times. Now, I don't have to ask him to see his meter. He'll automatically bring it to me and show it to me.”</i>
Family Support	Caregivers described how the intervention impacted support from relatives	<i>“Getting family members to assist is another thing I've been using in that implemented on the 3Ms... asking them if I'm not home and he is home to make sure that they monitor him.”</i>

Qualitative Interviews-Parents (N=21)

Parenting Educational Impact		
Helpful Reminders	Caregivers described how the intervention reminded them to supervise their teen during diabetes tasks	<i>"I do think that the program did help me kind of keep that in the forefront of my mind to make sure that I check (blood glucose levels).."</i>
The 3Ms	Caregivers described how the 3Ms mnemonic simplified diabetes management tasks into specific parental monitoring strategies	<i>"It specifically gave directions as to what to do with your child. 3Ms helped a lot because it's just simple, those 3Ms are just simple and that's really what you do."</i>
Caregiver Knowledge	Caregivers described how the intervention provided further insight and clarified supervisory strategies	<i>"There's so many different little myths out there that are so wrong, so this would give people good information... if they got into [the 3Ms]"</i>

Conclusions

- A brief, culturally tailored eHealth intervention was successful in improving glycemic control for Black adolescents with type 1 diabetes
 - Parents reported high satisfaction and improved family interactions in qualitative interviews
- Delivery during diabetes clinic visits was feasible
 - Increases provision of integrated behavioral health services to Black youth
- Future work could explore the potential of eHealth interventions to address other factors that affect health outcomes among Black youth
 - Screening and referrals to address other needs

Collaborators

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QUESTIONS?