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The Impact of Health-Related Social Needs on Health Outcomes Among Youth Presenting to a Midwest Pediatric Diabetes Clinic Network

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What are Social Determinants of Health (SDOH)?

"The **social determinants of health (SDOH)** are the non-medical factors that influence health outcomes. They are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems."

- World Health Organization[1]

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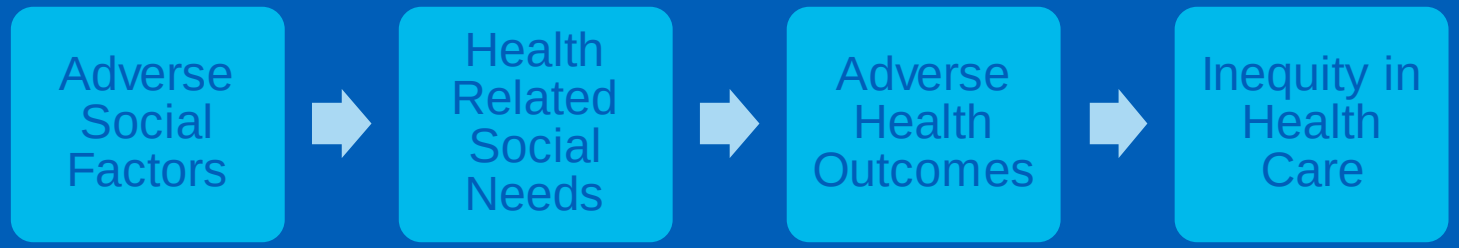
SDOH Impact



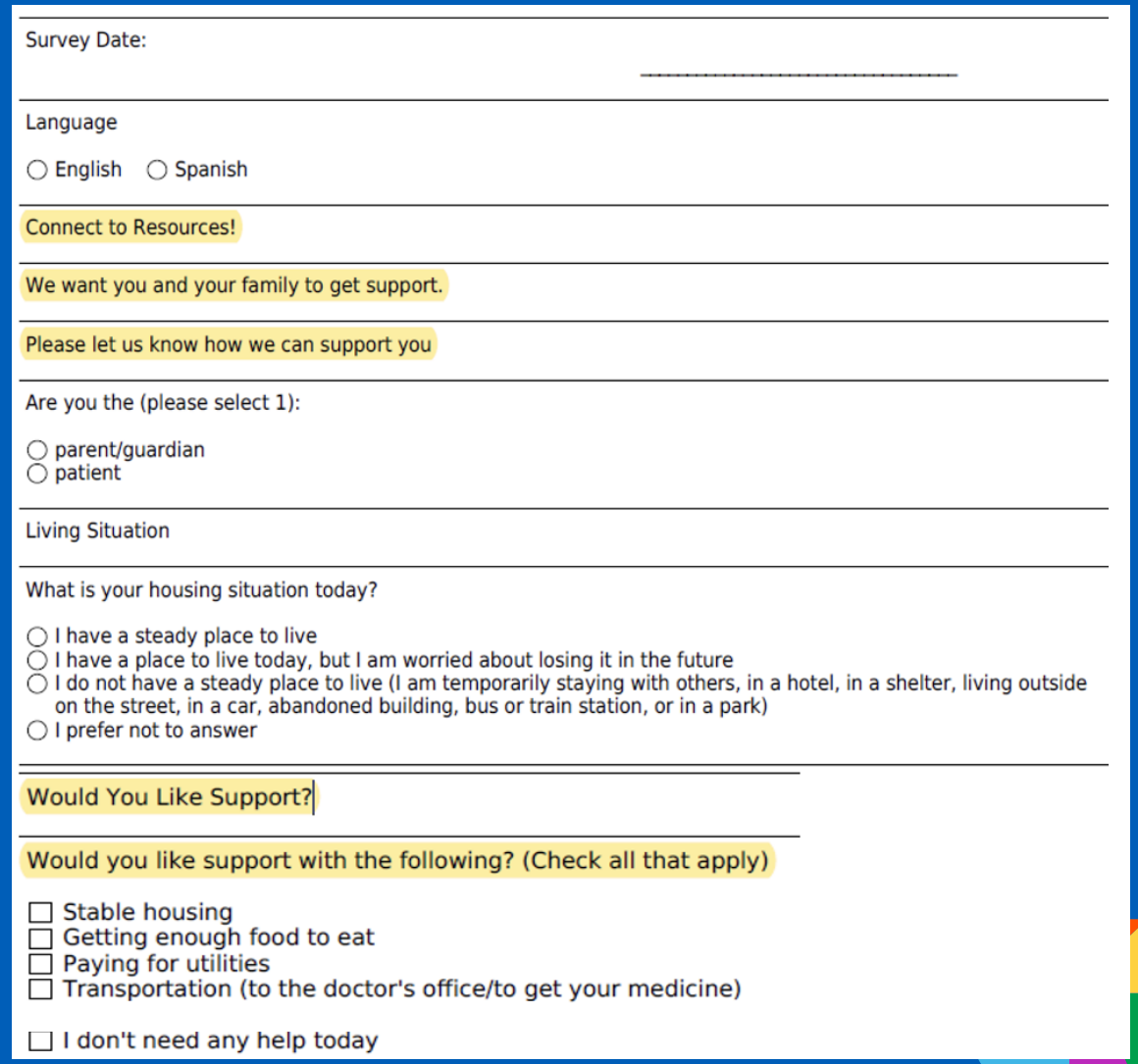
- Social determinants of health can impact up to 60% of health-related outcomes.[2]
  - In contrast, clinical care can drive up to 20% of outcomes.[2]
- Social risk factors influence diabetes control and complications[3,4]
  - Suboptimal glycemic control
  - Higher healthcare utilization
  - Long-term diabetes complications
- Screening for social risk/needs is recommended to improve outcomes and reduce costs.[5]
- The American Diabetes Association recommends screening for SDOH to inform treatment decisions.[6]

Study Overview

- Research Question: What are the prevalence of health-related social needs (HRSNs) at the Children's Mercy Diabetes center and do these children with HRSNs have poorer diabetes-related outcomes?
- Study Design: Retrospective cohort study
- Risk Factors: Positive health-related social needs screening
- Outcomes: Measures of diabetes control
- Hypothesis: Youth with health-related social needs are more likely to have adverse diabetes-related outcomes compared to youth without HRSNs.

HRSN (Health Related Social Need) screening

- Evaluates for[7]:
  - Housing insecurity
  - Food insecurity
  - Transportation barriers
  - Utilities insecurity
  - If respondents desire help
- HRSN screenings are distributed via text message link as part of clinical intake forms during quarterly standard of care diabetes clinic visits
  - Link sent via text message to guardians (or patients =/> 18yo) with T1D or T2D at 5/3/1 day(s) prior to visit
  - If still incomplete, a tablet is provided at time of the clinic visit while waiting for the provider



Survey Date: _____

Language

◯ English ◯ Spanish

Connect to Resources!

We want you and your family to get support.

Please let us know how we can support you

Are you the (please select 1):

◯ parent/guardian
◯ patient

Living Situation

What is your housing situation today?

◯ I have a steady place to live
◯ I have a place to live today, but I am worried about losing it in the future
◯ I do not have a steady place to live (I am temporarily staying with others, in a hotel, in a shelter, living outside on the street, in a car, abandoned building, bus or train station, or in a park)
◯ I prefer not to answer

Would You Like Support?

Would you like support with the following? (Check all that apply)

☐ Stable housing
☐ Getting enough food to eat
☐ Paying for utilities
☐ Transportation (to the doctor's office/to get your medicine)

☐ I don't need any help today

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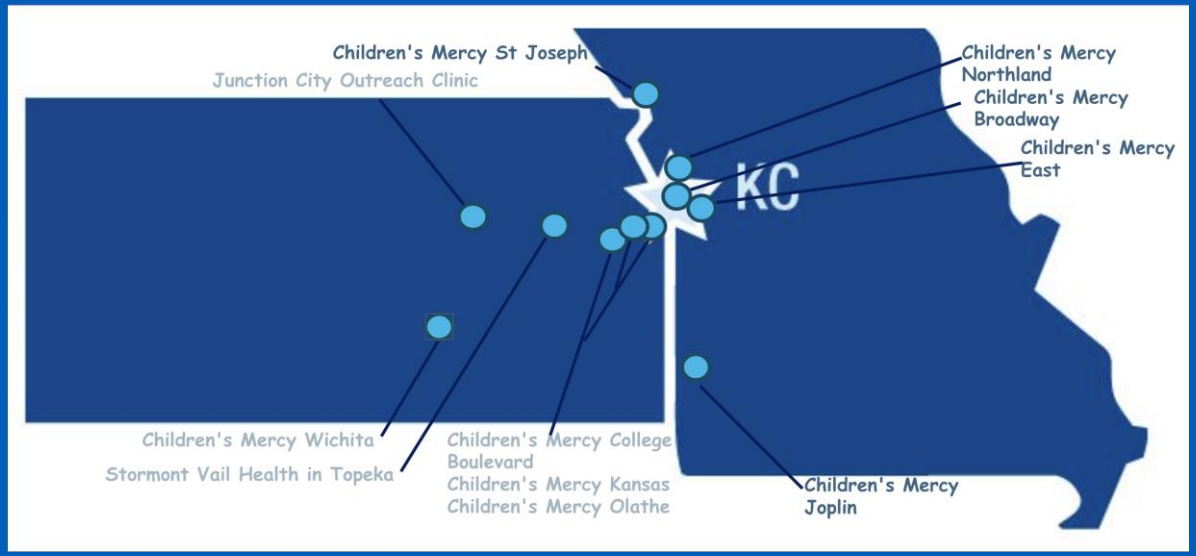
Methods: Setting and Participants

- Children's Mercy Diabetes Center - 11 sites across MO and KS
- More than 2,000 patients with T1D and >400 with T2D
- Any patient who had a fully completed a HRSN screen during a routine diabetes clinic visit



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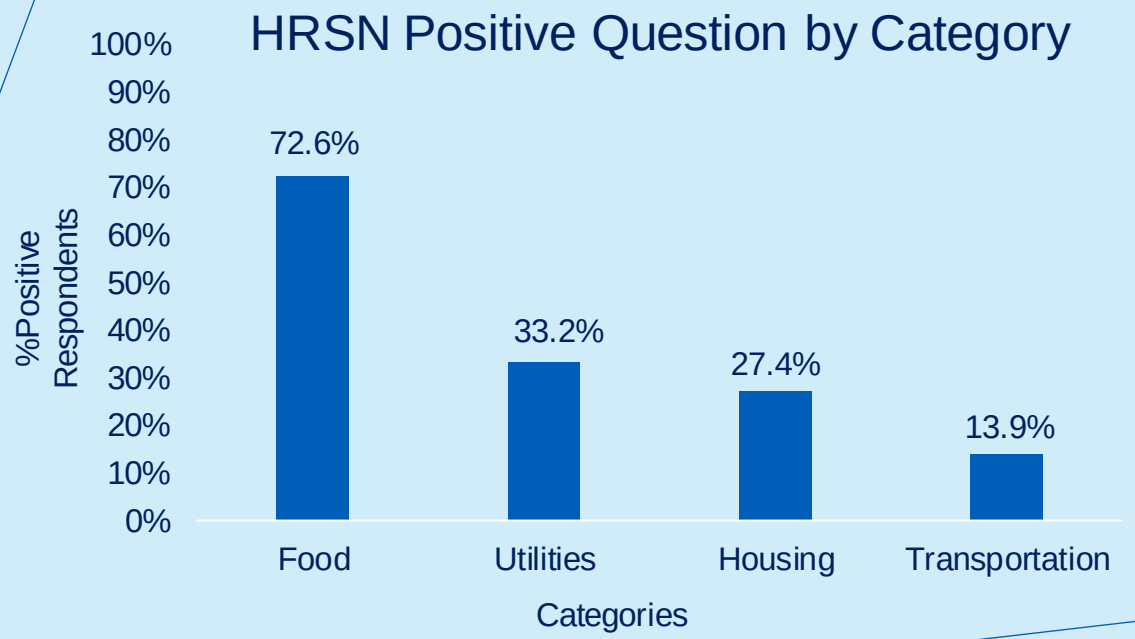
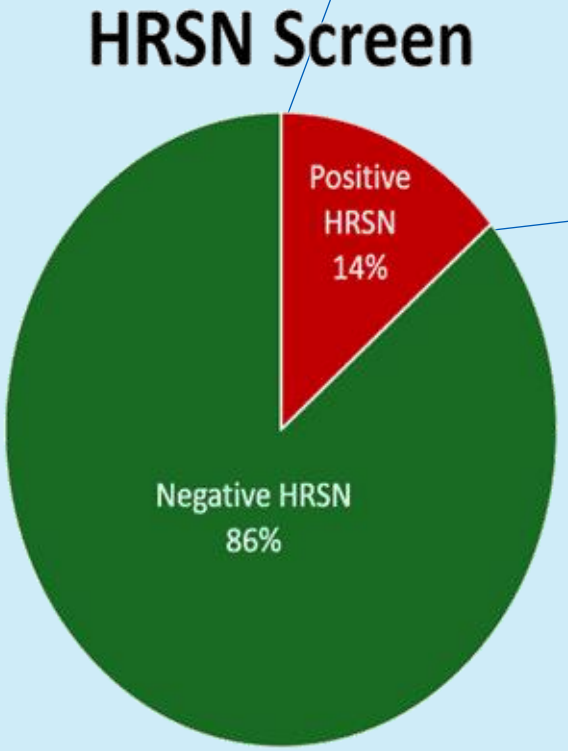
Methods: Data Collection and Analysis

- **Data Collection**
  - Completed HRSN data in REDCap were collected from 9/1/21 to 8/30/2022 to determine baseline cohort
  - Demographic and clinical data were collected from REDCap and Electronic Health Record for each unique patient from the time of first screen through 8/30/23
- **Analysis**
  - Comparisons were made using chi-square or independent t-test between positive and negative HRSN screens
  - Positive screens were defined as a positive response to ANY social need

HRSN Respondents

- Out of 1,880 Respondents:
  - 259 were HRSN Positive
  - 1621 were HRSN Negative





- Positive screens are connected with social work, care navigators, and/or LiftUpKC resources.

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Demographics

	Total n (%); n = 1880	HRSN Positive n (%); n=259	HRSN Negative n (%); n=1621	*p* value
Sex				
Female	894 (47.6)	125 (48.3)	769 (47.4)	0.8
Age at first screen (years)*	13.6 (4.2)	13.6 (4.2)	13.6 (4.1)	1.0
Race/Ethnicity				
Hispanic	180 (9.6)	37 (14.3)	143 (8.8)	Ref
Non-Hispanic Black	153 (8.1)	44 (17.0)	109 (6.8)	**<0.001**
Non-Hispanic White	1430 (76.1)	158 (61.0)	1272 (78.5)	**<0.001**
Other	117 (6.2)	20 (7.7)	97 (6.0)	**<0.001**
Insurance				
Commercial	1073 (57.1)	82 (31.7)	991 (61.1)	
Medicaid	748 (39.8)	167 (64.5)	581 (35.8)	**<0.001**
Other	59 (3.1)	10 (3.9)	49 (3.0)	
Diagnosis				
Type 1 Diabetes	1730 (92.0)	211 (81.5)	1519 (93.7)	
Type 2 Diabetes	126 (6.7)	40 (15.4)	86 (5.3)	**<0.001**
Other Diabetes	24 (1.3)	8 (3.1)	16 (1.0)	

*mean (SD), otherwise data are reported as n (%).

Baseline Diabetes Control

	All n (%); n=1880	HRSN Positive n (%); n=259	HRSN Negative n (%); n=1621	*p* value
Hemoglobin A1c*	8.44 (2.0)	8.9 (2.2)	8.4 (1.97)	**<0.001**
Time in Range on CGM as % *	52 (20.3)	45 (19)	53 (20)	**<0.001**
CGM use	1185 (63.0)	114 (44.0)	1071 (66.1)	**<0.001**
Pump Use	735 (39.1)	76 (29.3)	659 (40.7)	**<0.001**

*mean (SD), otherwise data are reported as n (%).

CGM = Continuous Glucose Monitor; HRSN = Health Related Social Need

Longitudinal Outcomes

	All n (%); n=1880	HRSN Positive n (%); n=259	HRSN Negative n (%); n=1621	*p* value
Date Difference Between Initial HRSN and 8/30/23 (months)*	14.8 (2.04	14.8 (2.3)	14.82 (2.0)	1
+HRSN on subsequent screen	151 (8.0)	75 (29.0)	76 (4.7)	<0.001
Longitudinal Outcomes				
Diabetic Ketoacidosis Admission	78 (4.1)	15(5.8)	63 (3.9)	0.153
Intensive Care Unit Admission	36 (1.9)	6 (2.3)	30 (1.9)	0.611
Emergency Department Visit	245 (13.0)	45 (17.4)	200 (12.3)	0.025
Any A1c >10%	397 (21.1)	84 (32.4)	313 (19.3)	<0.001
Any A1c >13%	85 (4.5)	22 (8.5)	63 (3.9)	<0.001
Continuous Glucose Monitor (CGM) Use	1384 (73.6)	150 (58.0)	1234 (76.1)	<0.001
Pump Use	1360 (72.3)	151 (58.3)	1209 (74.6)	<0.001
Positive PHQ4 Screen	233 (12.4)	56 (21.6)	177 (10.9)	<0.001
Any Missed Diabetes Visit	530 (28.2)	108 (41.7)	422 (26.0)	<0.001

*mean (SD), otherwise data are reported as n (%).
PHQ4 = Patient Health Questionnaire-4 for depression and anxiety

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Discussion

- Youth with positive HRSN screenings during diabetes clinic appointments experience suboptimal diabetes-related outcomes, including higher A1c levels, increased rates of missed appointments, anxiety/depression, ED visits, and less utilization of diabetes technologies.
- Health-related social needs are not consistently recognized and may go undiscussed in the visit, therefore regular screening is an important part of clinical care.
- It is imperative to address social risk factors when treating youth with diabetes to enhance equity in delivery of care and improve health outcomes.

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