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Parental Health Literacy and Acute Care Utilization in Children with Medical Complexity

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BACKGROUND

- Inadequate health literacy (ability to find, understand and use health information) is associated with poor health outcomes and high health care costs.
- Children with medical complexity (CMC) have high rates of acute care utilization.
- Understanding parental health literacy in CMC and its relationship to acute care utilization may inform interventions designed to lower utilization.

OBJECTIVE

- To examine parental health literacy for CMC and determine its association with acute care utilization.

METHODS

Design: Cross-sectional study

Participants & Time Period: CMC with complex chronic conditions (CCC) enrolled in the primary care clinic or CMC clinic at the study site.

- Exclusion criteria: Parents who were non-English speaking

Main Predictor:

- Single Item Literacy Screener (SILS):** SILS measures the frequency of needing assistance when reading medical information (Table 1)

Main Outcome: Acute care utilization as defined by annual emergency department (ED) visits, hospitalizations, and associated costs.

Analysis: Bivariate associations were analyzed with X² test and multivariable associations with a generalized linear model with log link and time from first to last episode as offset, adjusting for demographic and clinical characteristics.

Table 1: Categorization of Responses from the Single Item Literacy Screener (SILS)

	"How often do you need to have someone help you when you read instructions, pamphlets or other written material from your doctor or pharmacy?"				
Survey Response	Never	Rarely	Sometimes	Often	Always
Original Analyses (per SILS scoring instructions)	Adequate		Inadequate		
Post Hoc Analyses	High-Adequate	Low-Adequate	Inadequate		

Table 2: Characteristics of Study Population and Parental Health Literacy

		Parental Health Literacy			
		Total, n (%)			
		Overall	Adequate		Inadequate
High-Adequate	Low-Adequate				
Patient age, years	<2	250 (100)	202 (80.8)	33 (13.2)	15 (6.0)
	2-5	34 (13.8)	26 (76.5)	4 (11.8)	4 (11.8)
	6-11	71 (28.9)	57 (80.3)	9 (12.7)	5 (7.0)
	12-18	93 (37.8)	78 (83.9)	11 (11.8)	4 (4.3)
	19 and older	46 (18.7)	36 (78.3)	9 (19.6)	1 (2.2)
Insurance	Commercial	2 (0.8)	2 (100.0)	----	----
	Public	75 (31.7)	66 (88.0)	7 (9.3)	2 (2.7)
	Uninsured	160 (67.5)	124 (77.5)	25 (15.6)	11 (6.9)
Patient Race/ethnicity	Non-Hispanic white	2 (0.8)	2 (100.0)	----	----
	Non-Hispanic black	142 (59.4)	119 (83.8)	14 (9.9)	9 (6.3)
	Non-Hispanic other	66 (27.6)	52 (78.8)	11 (16.7)	3 (4.6)
	Hispanic	10 (4.2)	7 (70.0)	2 (20.0)	1 (10.0)
CCC, n*	0	21 (8.8)	14 (66.7)	5 (23.8)	2 (9.5)
	1	38 (15.4)	28 (73.7)	2 (5.3)	8 (21.1)
	2	29 (11.7)	23 (79.3)	4 (13.8)	2 (6.9)
	3+	30 (12.1)	23 (76.7)	5 (16.7)	2 (6.7)
Language spoken at home	English	150 (60.7)	126 (84.0)	22 (14.7)	2 (1.3)
	Spanish	239 (95.6)	195 (81.6)	31 (13.0)	13 (5.4)
	Other	7 (2.8)	4 (57.1)	1 (14.3)	2 (28.6)
Highest Parental Education**	High school or less	3 (1.2)	2 (66.7)	1 (33.3)	----
	Some college	64 (26.1)	44 (68.8)	12 (18.8)	8 (12.5)
	College degree	105 (42.9)	85 (81.0)	13 (12.4)	7 (6.7)
Household income (% of federal poverty line)	Advanced degree	43 (17.6)	39 (90.7)	4 (9.3)	----
	<100%	33 (13.5)	30 (90.9)	3 (9.1)	----
	100-200%	134 (60.4)	103 (76.9)	21 (15.7)	10 (7.5)
	>200%	61 (27.5)	55 (90.2)	4 (6.6)	2 (3.3)
		27 (12.2)	26 (96.3)	1 (3.7)	----

*p<0.01 for both original (adequate vs. inadequate health literacy) and post hoc analysis (high-adequate vs. low-adequate vs. inadequate);

**p<0.05 for both original and post hoc analyses; all other comparisons p>0.05

Table 3: Adjusted Association of Parental Health Literacy and Acute Care Utilization

Health Literacy	Adjusted Annual Acute Care Utilization per Patient ^a			
	ED Visits	ED Costs	Hospitalizations	Hospitalization Costs
Original Analyses (per SILS scoring instructions)				
Inadequate	0.91 (0.68, 1.22)	0.77 (0.38, 1.53)	0.89 (0.63, 1.25)	0.72 (0.4, 1.3)
Adequate	Ref	Ref	Ref	Ref
Post Hoc Analyses				
Low-Adequate	1.15 (0.9, 1.5)	7.5 (4.1, 13.9)^b	1.4 (1.03, 1.8)^c	1.6 (1.04, 2.6)^c
Inadequate	1.0 (0.7, 1.5)	0.4 (0.2, 0.95)^c	1.0 (0.7, 1.6)	0.9 (0.4, 2.1)
High-Adequate	Ref	Ref	Ref	Ref

a. Adjusted by patient age, race/ethnicity, number of CCCs, technology dependence, insurance type, language spoken at home, parent sex, and marital status

b. p<0.001

c. p<0.05

ED, emergency department

RESULTS

- About 94% of parents had adequate health literacy (Table 2).
 - Adequate health literacy increased with the number of CCCs (p<0.01).
- When using traditional categorization of SILS responses there were no differences in acute care utilization by health literacy in the bivariate and adjusted analyses (Table 4).
- In post-hoc adjusted analyses, parents with Low-Adequate health literacy had seven times greater annual ED costs, 35% more annual hospitalizations and 64% greater hospitalization costs compared to parents with High-Adequate health literacy (Table 4).
- In contrast, parents with Inadequate health literacy had decreased ED costs compared to parents with High-Adequate health literacy and no difference in hospitalizations or hospitalization costs.

CONCLUSIONS

- Parents of CMC had high rates of adequate health literacy as measured by the SILS.
- Future studies should determine if this is common among parents of CMC or unique to our study population.
- We found few associations of parental health literacy with acute care utilization.
- Future studies should examine if additional components of health literacy (listening, speaking, numeracy skills) not included in the SILS better predict acute care utilization in CMC.



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