

Examining health literacy among a low-income adolescent population in California



Brian Calimlim¹, MS, Philip Massey, MPH¹, Michael Preli¹, DPA, MPH, Abdelmonem Afifi¹, PhD, Elaine Quiter¹, MS, Sharon Nessim², DrPH, Nancy Wongvipat-Kalev², MPH, Daisy Osuna², MHA, Deborah Glik¹, ScD

¹ Fielding School of Public Health, University of California Los Angeles; ² Health Net, Inc, Woodland Hills, California



Background and Objectives

- 93% of American adolescents have comprehensive health insurance¹
- Few adolescents receive preventative care, regardless of insurance coverage²
- Adolescent health may vary based on factors such as health literacy

Study Objective:

Explore the association between health literacy and:

- General health
- Emotional health
- Annual wellness visits

Expanded Health Literacy

The measurement of health literacy is based on an understanding that extends beyond reading and writing skills and incorporates competencies needed to understand and manage complex health information and services.³ These expanded competencies are encompassed by the following domains:

- Navigating the health care system (HC)
- Patient-provider encounter (PP)
- Rights and responsibilities (RR)
- Confidence in health information from personal sources (CP)
- Confidence in health information from media (CM)
- Health information seeking using the Internet (II)

Methods

Study Data and Design: Cross-sectional analysis of survey data from adolescent members in a large California Health Plan

Sample Selection: Self-selected adolescent respondents to a 2010 mailed survey

Sample Size: n=1,142

Outcome measures:

- General health**
How would you rate your overall health?
- Emotional health**
In the last 4 weeks, how many days did a health or emotional problem keep you from doing what you usually do?
- Annual wellness visits**
When was the last time you went for a regular medical checkup or routine care? Routine care means seeing a doctor or other health care provider for something that is not a medical emergency.

Primary predictors:

- Measures of expanded domains of health literacy

Additional covariates:

- Gender, age, ethnicity, community type
- Usual source of care
- Physical activity levels

Analysis: Multinomial logistic regression

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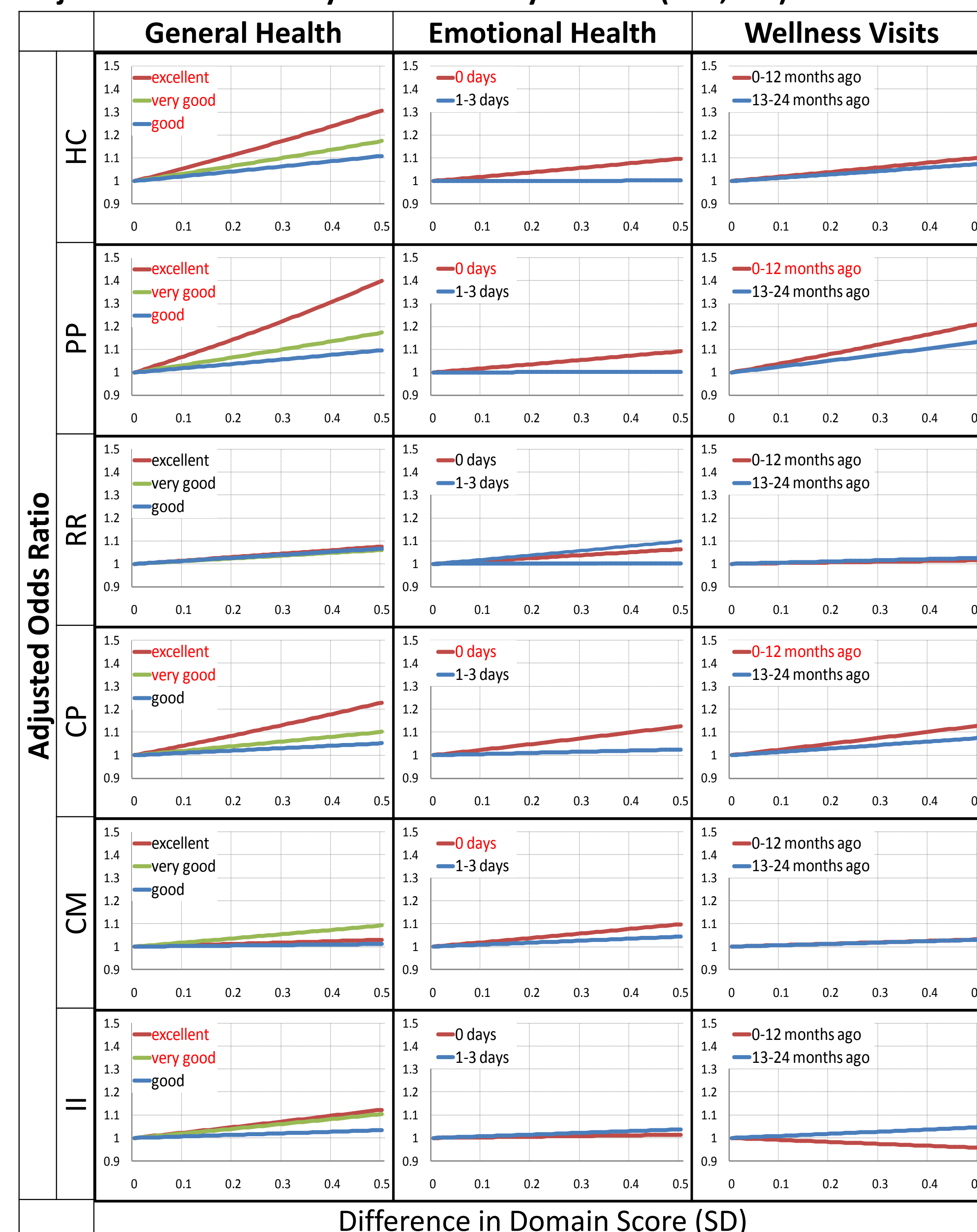
Results

Multinomial logistic regression models: general health, emotional health and wellness visits (n=1,142)

Effect	Category	General Health (ref: fair/poor)			Emotional Health (ref: 4+ days)			Wellness Visits (ref: 2+ years ago)														
		excellent	very good	good	0 days	1-3 days	0-12 months ago	13-24 months ago														
sex (ref: Female)	Male	1.12	0.43	2.92	0.71	0.29	1.72	1.76	0.73	4.22	1.65	0.74	3.71	1.02	0.40	2.62	1.09	0.30	3.90	1.47	0.35	6.22
age (ref: 13 years old)	14	0.35	0.15	0.81	0.33	0.16	0.68	0.87	0.42	1.80	1.08	0.53	2.18	1.80	0.84	3.83	0.56	0.21	1.46	0.64	0.20	2.00
	15	0.28	0.12	0.64	0.34	0.17	0.68	0.84	0.41	1.71	0.57	0.31	1.06	0.88	0.44	1.74	0.47	0.19	1.16	0.49	0.16	1.45
	16	0.32	0.13	0.77	0.21	0.10	0.46	1.07	0.52	2.20	0.59	0.30	1.17	1.17	0.57	2.42	0.53	0.20	1.39	0.46	0.14	1.47
	17	0.14	0.05	0.44	0.37	0.17	0.82	1.04	0.47	2.28	0.28	0.13	0.57	0.90	0.43	1.90	0.37	0.13	1.05	0.41	0.12	1.42
sex x age (ref: Female, 13)	Male, 14	3.74	1.03	13.62	2.56	0.77	8.54	0.58	0.17	1.90	0.65	0.21	1.97	0.39	0.11	1.41	1.85	0.34	10.07	0.73	0.10	5.35
	Male, 15	3.02	0.80	11.43	4.33	1.32	14.21	1.04	0.32	3.37	1.65	0.55	4.91	1.83	0.53	6.27	3.66	0.60	22.15	1.76	0.22	13.89
	Male, 16	4.22	1.01	17.61	6.00	1.56	23.09	1.04	0.29	3.71	2.47	0.70	8.71	1.82	0.45	7.37	0.76	0.15	3.77	0.71	0.11	4.66
race (ref: White)	Male, 17	5.14	1.00	26.45	2.59	0.67	10.05	0.78	0.21	2.87	1.55	0.47	5.17	1.47	0.40	5.41	3.27	0.49	21.96	1.88	0.21	17.09
	Black	0.86	0.39	1.87	0.82	0.41	1.61	1.02	0.53	1.94	1.87	0.99	3.56	1.67	0.84	3.30	1.75	0.71	4.29	1.10	0.37	3.30
	Hispanic	0.70	0.39	1.26	0.43	0.26	0.73	0.71	0.43	1.17	1.41	0.89	2.23	1.10	0.68	1.80	1.34	0.71	2.52	1.13	0.53	2.41
	Mixed	0.57	0.29	1.11	0.59	0.33	1.03	0.53	0.31	0.93	1.11	0.67	1.83	1.14	0.67	1.93	0.99	0.51	1.94	1.16	0.52	2.58
physical activity (ref: 0 days)	Other	0.92	0.40	2.12	0.68	0.33	1.42	0.70	0.34	1.43	1.11	0.58	2.13	0.94	0.47	1.89	1.72	0.69	4.31	0.60	0.18	1.99
	1-2 days	1.72	0.68	4.33	4.04	1.76	9.28	1.74	0.96	3.16	1.06	0.54	2.09	0.95	0.47	1.92	2.05	0.83	5.08	1.33	0.45	3.90
	3-6 days	3.32	1.48	7.48	8.79	4.05	19.04	2.54	1.47	4.40	1.18	0.63	2.20	1.33	0.70	2.53	1.24	0.56	2.74	0.89	0.35	2.29
	7 days	9.96	4.13	24.04	8.87	3.76	20.90	2.12	1.09	4.14	1.09	0.55	2.15	0.66	0.32	1.38	1.35	0.55	3.33	0.70	0.23	2.10
source of usual care (ref: no)	yes	1.09	0.70	1.72	1.14	0.77	1.69	0.91	0.63	1.31	1.32	0.92	1.89	1.01	0.69	1.48	3.62	2.23	5.86	1.54	0.86	2.75
	community type (ref: rural)	suburban	1.36	0.56	3.28	1.37	0.64	2.95	1.68	0.82	3.45	1.18	0.61	2.28	1.41	0.70	2.84	1.64	0.69	3.95	2.34	0.84
health plan (ref: Healthy Families)	Medi-Cal	0.47	0.29	0.75	0.41	0.27	0.60	0.66	0.44	0.99	0.84	0.57	1.22	0.69	0.46	1.02	1.12	0.68	1.86	0.75	0.41	1.38
	HC: Healthcare System	1.57	1.31	1.89	1.31	1.12	1.53	1.19	1.03	1.37	1.17	1.01	1.35	1.00	0.86	1.17	1.18	0.97	1.43	1.13	0.89	1.43
PP: Patient-Provider	RR: Rights-Responsibilities	1.14	0.95	1.38	1.11	0.95	1.30	1.13	0.97	1.31	1.12	0.97	1.30	1.06	0.90	1.23	1.03	0.83	1.27	1.05	0.81	1.36
	CP: Confidence - Personal	1.39	1.17	1.65	1.17	1.01	1.35	1.08	0.94	1.24	1.21	1.05	1.38	1.04	0.90	1.20	1.21	1.00	1.47	1.12	0.89	1.41
CM: Confidence - Media	II: Info-Internet	1.05	0.87	1.28	1.17	0.99	1.39	1.02	0.87	1.20	1.18	1.01	1.39	1.08	0.91	1.28	1.06	0.85	1.32	1.05	0.81	1.38
	II: Info-Internet	1.22	1.02	1.45	1.18	1.01	1.38	1.06	0.92	1.22	1.02	0.89	1.18	1.06	0.91	1.24	0.93	0.76	1.13	1.08	0.85	1.38

Odds ratios in red text indicate statistical significance (p < 0.05)

Adjusted odds ratios by health literacy domain (n=1,142)



Red text indicate statistical significance (p < 0.05)

Navigating the health care system

Higher literacy in navigating the healthcare system is associated with higher measures of general health and the absence of emotional health issues.

Patient-provider encounter

Higher literacy in the patient-provider encounter is associated with higher measures of general health, the absence of emotional health issues, and annual wellness visits.

Rights and responsibilities

The results do not suggest a significant association between higher literacy in rights and responsibilities and general health, emotional health, and wellness visits.

Confidence in health information from personal sources

Higher literacy in confidence in health information from personal sources is associated with higher measures of general health, the absence of emotional issues, and annual wellness visits.

Confidence in health information from media

Higher literacy in confidence in health information from media is associated with fewer emotional health issues.

Health information seeking using the internet

Higher literacy in health information seeking using the internet is associated with higher measures of general health.

Sample Characteristics

Outcomes and demographic characteristics (n=1,142)

Outcomes	Category	n	%
general health	fair / poor	218	19.1
	good	369	32.3
	very good	348	30.5
	excellent	207	18.1
emotional health	4+ days	190	16.6
	1-3 days	339	29.7
	0 days	613	53.7
wellness visits	2+ years	87	7.6
	13-24 months	124	10.9
	0-12 months	931	81.5
Demographics		n	%
sex	Male	433	37.9
	Female	709	62.1
age	13 years old	231	20.2
	14 years old	251	22.0
	15 years old	289	25.3
	16 years old	214	18.7
	17 years old	157	13.7
	Other	111	9.7
race	White	262	22.9
	Black	143	12.5
	Hispanic	389	34.1
	Mixed	237	20.8
	Other	111	9.7
physical activity (per week)	0 days	93	8.1
	1-2 days	204	17.9
	3-6 days	609	53.3
	7 days	236	20.7
source of usual care	yes	742	65.0
	no	400	35.0
community type	rural	264	23.1
	suburban	110	9.6
	urban	768	67.3
	Other	111	9.7
health plan	Healthy Families	384	33.6
	Medi-Cal	758	66.4
Health literacy domains		mean	SD
HC: Healthcare System		0.0	1.2
PP: Patient-Provider		0.0	1.1
RR: Rights-Responsibilities		0.0	1.1
CP: Confidence - Personal		0.0	1.3
CM: Confidence - Media		0.0	1.1
II: Info-Internet		0.0	1.2

Conclusions

Improvements in health literacy may be related to better general health.

Results suggest health literacy is positively associated with general health, with navigating the health care system and the patient-provider encounter carrying the largest effects.

Improvements in health literacy may be related to better emotional health, though improvements across multiple domains are necessary for a substantial effect.

Results suggest an association between health literacy and emotional health, but no single domain carries a dominant effect. This suggests that emotional health interventions may need to adopt a comprehensive multi-pronged approach to provide substantial improvements.

Improvements in health literacy may be related to less time between wellness visits.

Increases in the patient-provider encounter and health information from personal sources domains are associated with wellness visits. Interventions aimed at wellness visits may want to focus on the patient-provider encounter and the teen's personal network for health information.

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