

# Screening for Health Literacy, Social Determinants, and Discrimination in Health Plans

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A growing body of literature has led to national attention on the root causes of health inequity—that is, the reality that many Americans have been disadvantaged from achieving their best health because of social, structural, or societal factors that stand in their way. Health inequities are manifested in health disparities, which are differences in health and health care that occur due to social, economic, or environmental disadvantages.<sup>1</sup> Such disparities adversely affect groups of individuals who have systematically experienced greater obstacles to health based on their identities or geography. From the federal government<sup>2</sup> to local communities,<sup>3</sup> calls for moving further upstream to address those obstacles are reverberating. Large national health plans are responding to the call, with most of these plans now building infrastructures to achieve health equity for their patients.

Although many health plans screen for social determinants of health (SDOH)—the conditions in which people live, work, play, learn, and worship<sup>4</sup>—fewer systematically screen patients for structural determinants of health, which are the economic and social experiences and policies that influence health, such as discrimination and literacy.<sup>5</sup> These structural determinants and social determinants are often interrelated.<sup>6</sup>

Multiple studies have shown that there are significant differences in perceived health care discrimination (PHD) by race/ethnicity, with patients from non-White groups being more likely to report that they believe they would have received better medical care if they were a different race.<sup>5,7</sup> This perception has been connected to poorer health outcomes. In one study, self-reported experiences of racism were associated with the adoption of unhealthy behaviors that increase cancer risk, and health care racism was associated with lower rates of cancer screening.<sup>8</sup> Additionally, patients who report discrimination within a health care setting are more likely to be dissatisfied with their medical care, to postpone medical treatment, and to underutilize preventive care and health care services in general.<sup>9-11</sup>

Health literacy (HL), “the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions,”<sup>11</sup> is also a predictor of

## ABSTRACT

**OBJECTIVES:** Health inequities are frequently driven by social determinants of health (SDOH) and structural determinants of health. Our pilot sought to test the feasibility of screening for health literacy (HL) and perceived health care discrimination (PHD) through a live telephonic-facilitated survey experience with managed care patients.

**STUDY DESIGN:** Cross-sectional study.

**METHODS:** Newly enrolled Medicare Advantage patients were screened for self-reported PHD, HL, and multiple SDOH using validated screening tools. Response rates for both HL and PHD screens were analyzed. A  $\chi^2$  test for association between response to PHD screen and patient race was conducted. A weighted logistic regression model was used to understand how HL is associated with SDOH and demographic factors (age, gender, race/ethnicity, and income).

**RESULTS:** HL and PHD screening questions have different levels of feasibility. Administering the HL screen did not present a challenge, and patients felt comfortable responding to it. On the other hand, the PHD question had a lower response rate among patients, and some concierge advocates felt uncomfortable asking patients the question. Based on the self-reported HL data collected, low/limited HL is associated with patients who were Black, were low income, reported loneliness or isolation, or reported food insecurity. It is important to note that the study's findings are limited by the small sample size and that study results do not imply causality.

**CONCLUSIONS:** It is feasible to collect self-reported HL data through a live telephonic format at the time of patient enrollment into a health plan. Health plans can leverage such screenings to better understand patient barriers for health equity-oriented interventions.

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health outcomes and health disparities. Low/limited HL has been associated with poorer health outcomes.<sup>12,13</sup> Thirty-six percent of US adults have some difficulty understanding and reading health information.<sup>14</sup> Some of the greatest challenges in HL in the US occur among racial and ethnic minority groups, those from different cultural backgrounds, and those who do not speak English as a first language<sup>14-18</sup>—groups more likely to experience socioeconomic disparities and worse health outcomes.<sup>19,20</sup>

In this first-of-its-kind feasibility study, we aimed to determine whether self-reported HL and PHD screens can be applied and facilitated during intake of new Medicare Advantage (MA) member enrollment and onboarding. National accrediting bodies, such as the National Committee for Quality Assurance and CMS, are currently exploring the inclusion of patient-reported discrimination and HL in their programs. Currently, these candidate questions are being field-tested for consideration in future surveys.<sup>21,22</sup> The collection of information such as HL and PHD during enrollment—the earliest interaction of patients with their health plan—can lay a foundation for future health equity efforts.

## METHODS

### Study Design

This is a cross-sectional study of a health equity screening pilot to better understand patient-reported PHD and HL. A live telephonic concierge outreach service was provided to a sample of patients who were newly enrolled in Humana MA plans. While providing this concierge service, patients were asked 2 validated health equity-related questions during their initial intake. The 2 questions were as follows:

- Single-item PHD screen: “Within the past 12 months when seeking health care, do you feel your experiences were worse than, the same as, or better than for people of other races?”<sup>23</sup> Possible answers were “worse than,” “same as,” or “better than,” with “worse than” considered a positive screening result.
- Single-item HL screen: “How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?”<sup>24</sup> Possible answers were “never,” “rarely,” “sometimes,” “often,” or “always,” with the last 3 options indicating a positive screening result.

These questions were chosen for their simplicity, validity, and brevity. The PHD question was selected from the CDC Behavioral Risk Factor Surveillance System’s optional module.<sup>23</sup> The HL question was the Single Item Literacy Screener, validated by Morris et al.<sup>24</sup>

Patient response rates to HL and PHD questions were analyzed as an assessment of feasibility. We conducted a  $\chi^2$  test for association between PHD screen nonresponse and patient race. We use a

## TAKEAWAY POINTS

Learnings from this article can be useful to senior leaders and managers in managed care organizations looking to make an impact on health inequities. We provide early insight into the following:

- ▶ How screening for social and structural determinants of health can be integrated into health plan member intakes
- ▶ Application of validated tools to screen patients for the above determinants in managed care settings
- ▶ Barriers and considerations to screening patients for health literacy and discrimination, as this information will be more widely asked of health plans

dichotomized CMS race and ethnicity categorization of Black vs all other races for data analysis purposes. Furthermore, we conducted a multivariate and weighted logistic regression analysis for the outcome of self-reported low/limited HL (ie, positive HL screen). Predictors considered were patient sex assigned at birth, race/ethnicity, receiving Medicare Part D Extra Help (also known as the Part D low-income subsidy; hereafter referred to as “Extra Help”), and responses to SDOH-related questions that are a standard part of the concierge screening script. CMS’ administrative race/ethnicity data have high concordance with self-reported race/ethnicity for Black patients<sup>25</sup> and are shown to perform well for non-Hispanic White and Black patients.<sup>26</sup> Given that lower income is known to be associated with low/limited HL,<sup>17,27,28</sup> we examined the relationship between receiving Extra Help and low/limited HL.

### Study Population and Workflow

Humana, Inc is an integrated health and wellness company that provides a wide range of insurance services to millions of patients in MA, Medicare Prescription Drug, Medicaid, and military plans, as well as primary care, pharmacy, and home health care services for seniors and dual-eligible patients across the United States.

The study population consisted of patients newly enrolled in MA plans with medical and prescription drug coverages who were identified as most likely to disenroll at the end of the annual insurance open enrollment period and agreed to participate in the concierge program and answered the HL and PHD screening questions. Participating patients received ongoing outreach by assigned concierge advocates, whose focus is to provide a positive initial experience and education on patients’ new plans and benefits based on their unique needs. Patients were provided access to their assigned concierge advocate for their first 90 days with Humana and could opt out at any time. Concierge advocates initially administered a comprehensive script telephonically. In addition to HL and PHD questions, the script included questions focused on SDOH and was administered in the patients’ preferred language. Race/ethnicity information and sex assigned at birth were obtained from CMS administrative data provided to Humana on a monthly basis.

Patients who screened positive for low/limited HL were asked to share difficult-to-understand health-related information they

**TABLE 1.** Demographic, Receiving Extra Help, Preferred Language, and SDOH Questions Response Distributions of Screened Patients (N=406)

Characteristic	Screened patients	Percentage of screened patients
Patient sex assigned at birth		
Female	244	60.10%
Male	162	39.90%
Patient race/ethnicity		
White	237	58.37%
Black	113	27.83%
Hispanic	20	4.93%
Asian	15	3.69%
All other	21	5.17%
Patient age		
≤69 years	132	32.51%
≥70 years	274	67.49%
Preferred language		
English	381	93.84%
Spanish	24	5.91%
Other	1	0.25%
Part D Extra Help recipient		
No	285	70.20%
Yes	121	29.80%
How often do you feel lonely or isolated from those around you?		
Always	6	1.48%
Often	14	3.45%
Sometimes	76	18.72%
Rarely	66	16.26%
Patient declined to answer	22	5.42%
Not asked	9	2.22%
Never	211	51.97%
N/A	2	0.49%
Within the past 12 months, were you worried that your food would run out before you had money to buy more?		
Often true	11	2.71%
Sometimes true	52	12.81%
Never true	310	76.35%
Patient declined to answer	24	5.91%
Not asked	8	1.97%
N/A	1	0.25%
How hard is it for you to pay for very basic things like food, housing, medical care, and heat?		
Very hard	16	3.94%
Sometimes hard	94	23.15%
Not hard at all	264	65.02%
Patient declined to answer	23	5.67%
Not asked	8	1.97%
N/A	1	0.25%

N/A, not applicable; SDOH, social determinants of health.

received and if they would like assistance/support with those items. Patients who screened positive for PHD were asked to reflect on their current patient experience post enrollment. All patients were provided contact information for grievances.

**Study Period**

The pilot period was from December 2021 to March 2022. This article describes findings from 406 patients in the concierge program who were asked either the HL or PHD screening questions being piloted. This study was reviewed by and received an institutional review board exemption from the Humana Healthcare Research Human Subject Protection Office (HPSO ID 188).

**Characteristics of Screened Patients**

We screened a total of 406 new enrollees in Humana MA plans for HL and PHD. The demographic distribution of the study population is described in **Table 1**. Women comprised most of the screened patients (60.1%). More than half (58.4%) were White, 27.8% were Black, 4.9% were Hispanic, and 3.7% were Asian. Most screened patients (67.5%) were 70 years or older, and 29.8% of screened patients received Extra Help, which assists Medicare beneficiaries with the costs of prescription co-payments, annual deductibles, and monthly premiums.<sup>29</sup> For reference purposes, we note that our study sample had higher proportions of female, non-White, and Extra Help–receiving patients compared with the national MA population of 2019. The national MA population consisted of 56.6% women<sup>30</sup> (vs 60.1% in our study sample), 70.5% White beneficiaries<sup>31</sup> (vs 58.4%), and 21.0% receiving Extra Help (vs 29.8%).<sup>32</sup> See **Table 2**<sup>30-32</sup> for more details.

In addition to the HL and PHD questions, the patient survey included SDOH questions taken from the Accountable Health Communities survey. We asked the following questions: (1) How hard is it for you to pay for very basic things like food, housing, medical care, and heat? (2) Within the past 12 months, were you worried that your food would run out before you had money to buy more? and (3) How often do you feel lonely or isolated from those around you?<sup>33-36</sup> The SDOH response options and respective distributions are shown in **Table 1**.

**Survey Responses**

**Table 3** displays the overall distribution of responses to the 2 health equity screening questions.

**HL screening.** A total of 17.5% of screened patients reported low/limited HL, with 4.9% reporting always needing help to read instructions, pamphlets, or other written material from their doctor or pharmacy and 6.9% reporting needing help always or often. A small percentage (5.4%) declined to respond to the HL screen.

**PHD screening.** Less than 2% (1.7%) reported feeling their health care experiences were worse than those of other races. A slightly larger group felt their experiences were better than those of other races (8.4%). The most common response was that patients felt their experiences were the same as those of other races (63%). Approximately a fifth of the cohort (22%) declined to answer the PHD question, and 4.9% of patients were not asked the PHD screen.

There was a difference in nonresponse between the HL question (5.4% nonresponse rate) and PHD question (22.8% nonresponse rate) when screening questions were asked.

**RESULTS**

Our pilot sought to test the feasibility of HL and PHD screens through a live telephonic-facilitated survey experience, such as Humana’s concierge program. We learned that HL and PHD screening questions have different levels of feasibility.

**Feasibility of Administering Health Equity Screens: HL**

Concierge advocates noted that they felt comfortable administering the HL screening question with participating patients. Patients felt comfortable answering the HL screen, with only 5.4% choosing not to respond.

**Feasibility of Administering Health Equity Screens: PHD**

The PHD screen did not meet a feasibility threshold to examine relationships with other factors. In some instances (4.9% of screens for participating patients), concierge advocates independently chose to skip the PHD question as they administered the survey script. Upon further exploration, concierge advocates brought up concerns related to administering the screening, including difficulties explaining nuances of the answer choices and anticipating having to address a potential diverse range of patient reactions to the screening. We did not observe this for the HL screen question. Compared with the HL screen patient nonresponse rate (5.4%), 22.8% of patients who were asked the PHD screening question chose not to respond.

Furthermore, we observed a reasonable difference in nonresponse rate between Black patients and patients of other races. We conducted a  $\chi^2$  test for association between nonresponse to the PHD screening and a dichotomous categorization of whether the patient race is Black. For patients who were asked the PHD screen, the nonresponse rate of 16.1% for Black patients is lower than the nonresponse rate of 23.2% for patients of other races, with a  $\chi^2$  test statistic of 3.54 ( $df=1$ ;  $P=.06$ ).

**TABLE 2.** Distribution of Patients in the Study Sample Compared With MA Population<sup>30-32</sup>

Patient characteristic	Study sample	MA population
Patient sex assigned at birth <sup>30</sup>		
Female	60.1%	56.6%
Male	39.9%	43.4%
Patient race/ethnicity <sup>31</sup>		
White	58.4%	70.5%
Black	27.8%	13.7%
Hispanic	4.9%	10.6%
All other	8.9%	5.2%
Patient age <sup>30</sup>		
≤64 years	12.6%	12.4%
65-75 years	43.8%	47.9%
≥75 years	43.6%	39.6%
Part D Extra Help recipient <sup>32</sup>		
No	70.2%	79.0%
Yes	29.8%	21.0%

MA, Medicare Advantage.

**TABLE 3.** Distribution of Responses to HL and PHD Survey Items When Patients (N=406) Were Asked the Screens

Screening item	Screen category	Screen response	Patient count	Percentage
HL	Positive screens (low/limited HL)	Always	20	4.93%
		Often	8	1.97%
		Sometimes	43	10.59%
	Negative screens	Rarely	56	13.79%
		Never	257	63.30%
Patient declined to answer		22	5.42%	
PHD <sup>a</sup>	Positive screen	Worse than	7	1.81%
	Negative screens	The same as	257	66.58%
		Better than	34	8.81%
		Patient declined to answer	88	22.80%

HL, health literacy; PHD, perceived health care discrimination.

<sup>a</sup>Twenty patients in the sample were not asked the PHD question. This table shows the response distribution of patients who were asked the PHD screening item.

Although few patients (7 of 406) reported PHD, 6 of those 7 patients were Black. The lower response rate, the lower level of comfort among concierge advocates with discussing the topic, and the lack of differentiation in the actual responses to PHD screening suggest that the live telephonic interview survey method may not be appropriate for collecting self-reported PHD.

**HL and Its Associations With Social Determinants and Demographic Factors**

Although our study’s focus was the feasibility of collecting foundational health equity data in a health plan through validated

**TABLE 4.** Demographic and SDOH Factors Associated With Low Health Literacy<sup>a</sup>

Variable	Level	Estimate	SE	OR	Z	P
	Intercept	-2.7611	0.3837		7.196	6.22 × 10 <sup>-13b</sup>
Age	70 years or older	0.1746	0.3197	1.3767	0.546	.58489
Race	Black	0.5481	0.3329	1.3950	1.646	.09967 <sup>b</sup>
Receiving Part D Extra Help	Yes	0.6348	0.3269	1.3867	1.942	.05218 <sup>b</sup>
Patient sex at birth	Female	0.1799	0.295	1.3431	0.61	.54195
SDOH: Within the past 12 months, were you worried that your food would run out before you had money to buy more?	Sometimes true/often true	0.9838	0.357	1.4290	2.755	.00586 <sup>b</sup>
SDOH: How often do you feel lonely or isolated from those around you?	Sometimes/often/always	1.1946	0.2988	1.3482	3.998	.000064 <sup>b</sup>

SDOH, social determinants of health.

<sup>a</sup>Weighted logistic regression estimates of SDOH and demographic factors in explaining the variability of low health literacy. Dispersion parameter for binomial family taken to be 1. Null deviance: 352.11 on 405 *df*. Residual deviance: 317.76 on 399 *df*. Akaike information criterion = 350.1.

<sup>b</sup>*P* ≤ .10.

screening questions, the pilot has produced data related to HL that we can use to understand the statistical associations of HL with SDOH and demographic factors.

We caution that the following analyses do not suggest causality but are being shared as association-based observations to be further explored. Our pilot oversampled lower-income and non-White patients—groups shown to have lower/limited HL compared with high-income and White individuals—based on the study population being those more likely to disenroll.<sup>17</sup> Although this allowed us to oversample subpopulations of interest, it introduced a sampling bias. Low income and belonging to racial/ethnic minority groups are also associated with higher disenrollment from MA plans.<sup>37,38</sup> We obtained sample weights using the iterative proportional fitting procedure to ensure our sample was representative of the MA patient population with respect to patient age (≥ 75 years vs < 75 years), race (White vs other races), sex at birth, and receiving Extra Help. The rest of this section and results in **Table 4** use the weighted sample.

The weighted rate of limited/low HL was 16% (95% CI, 12%-20%). Because of the small sample size of this pilot, we used 6 dichotomized variables as predictors in a weighted logistic regression model where the response variable is whether a patient responds with low/limited HL. The 6 variables were patient age (≥ 70 years vs < 70 years), patient race (Black vs other races), patient receiving Extra Help or not, patient sex at birth, and the patient-reported SDOH food insecurity (being worried sometimes or often that their food would run out before having money to buy more) and social isolation (feeling sometimes, often, or always isolated from those around them).

Compared with patients who never or rarely feel lonely or isolated from those around them, patients who sometimes, often, or always feel lonely or isolated had 1.43 times higher adjusted odds (*P* < .01) of screening positive for low/limited HL. Patients who agreed it was sometimes true or often true that they worried their food would run out before having money to buy more had 1.35 times higher adjusted odds (*P* = .006) of screening positive for low/limited HL compared with those who never had similar worry.

Patients receiving Extra Help had 1.39 times higher adjusted odds (*P* = .05) of screening positive for low/limited HL compared with patients who did not receive Extra Help. Black patients had 1.40 times higher adjusted odds (*P* = .10) of screening positive for low/limited HL compared with White patients (Table 4).

Statistical analyses were completed with the open-source R language (R Core Team). We used the R stats package implementation of generalized linear models<sup>39</sup> for maximum likelihood estimation of model parameters.

## DISCUSSION

To our knowledge, this is the first study of its kind to describe the relationships between HL, PHD, and SDOH in a national health plan and to test the feasibility of incorporating this sort of screening in the process of enrolling patients in an insurance program. Of the patients screened, nearly 18% (16% after sample weighting) reported low/limited HL or needing some sort of help understanding information from their doctor or pharmacy. Patients who reported low/limited HL were more likely to be Black, have low income, experience loneliness/social isolation, and have food insecurity. These findings are important as health plans and health systems work to better understand the interplay of factors that may contribute to poorer health outcomes and health inequities and could be modifiable or addressable in their patient populations.<sup>40</sup> Furthermore, we have demonstrated that a simple screener can be leveraged to draw further insights.

Most patients did not report feelings of PHD, but of those who did, nearly all of them were Black. However, drawing conclusions from this sample is challenging because of the low response rate as well as reported concierge advocate discomfort with asking the question. Further qualitative exploration of the concierge advocate discomfort and the reason why many patients declined to respond to the PHD question is warranted. Given that this was a feasibility study, understanding the experiences with screening may highlight barriers or opportunities for other organizations looking to implement such questions.

## Limitations

Our study has several limitations. First, a larger sample size would have allowed for a more robust analysis of correlation between the factors under study. Second, we did not utilize a random sampling technique, which means our pilot sample is not representative of the overall MA patient population. The results of this study do not imply causality but instead statistical associations between social and demographic factors and HL and PHD. Lastly, the causes of low/limited HL are multifactorial, and additional qualitative exploration to understand additional contributors to low/limited HL (eg, low/limited health insurance literacy, low/limited basic literacy, physical or cognitive disability) is warranted.<sup>41,42</sup>

We have since expanded the HL screening program to reach patients in a more representative Humana MA member population. We plan to include additional questions in future screenings and qualitative exploration to better understand factors associated with low/limited HL. This will allow us to appropriately tailor interventions for our patients. Planned additional analyses include examining the relationship between patient HL and other key metrics for health plans and health systems, including retention in the health plan, total cost of care, value-based care arrangements, acute care utilization,<sup>30</sup> and specific clinical outcomes. We are also exploring other avenues to incorporate these screenings, such as patient online enrollment vs staff-administered screening, allowing for broader application but also understanding and addressing staff barriers to screening. Finally, we are currently cocreating interventions and resources with national and community partners to address low/limited HL. For example, we have included HL screenings in a community health worker pilot underway with Volunteers of America Mid-States, leveraging the unique skills of community health workers to build trust and help patients navigate tools to improve HL.

## CONCLUSIONS

As CMS, the National Committee for Quality Assurance, and other bodies move the industry to expand our understanding of patient experience, barriers to full health potential, and how health inequities are widened and exacerbated, it is important for health plans to understand the interplay among HL, PHD, and social and structural determinants of health as influencers of health equity. We believe this study is an important first step in highlighting some of these relationships for the health care ecosystem to take action and have the tools to center health equity as a core goal for all.<sup>43</sup> ■

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## REFERENCES

- Health literacy. HealthyPeople.gov. Updated February 6, 2022. Accessed October 29, 2022. <https://wayback.archive-it.org/5774/20220414160933/https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/health-literacy>
- HHS Equity Action Plan. HHS. April 2022. Accessed October 29, 2022. <https://www.hhs.gov/sites/default/files/hhs-equity-action-plan.pdf>
- Local Conversations Health Equity series kicks off Monday night at SHS Commons. *Weirton Daily Times*. September 23, 2022. Accessed October 29, 2022. <https://www.weirtondailytimes.com/news/community/2022/09/local-conversations-health-equity-series-kicks-off-monday-night-at-shs-commons>
- Social determinants of health at CDC. CDC. Updated December 8, 2022. Accessed October 29, 2022. <https://www.cdc.gov/socialdeterminants/about.html>
- Understanding social determinants of health. Illinois Department of Public Health. Accessed October 29, 2022. <https://dph.illinois.gov/topics-services/life-stages-populations/infant-mortality/toolkit/understanding-sdoh.html>
- Long CL, Franklin SM, Hagan AS, et al. Health-related social needs among older adults enrolled in Medicare Advantage. *Health Aff (Millwood)*. 2022;41(4):557-562. doi:10.1377/hlthaff.2021.01547
- Abramson CM, Hashemi M, Sánchez-Jankowski M. Perceived discrimination in U.S. healthcare: charting the effects of key social characteristics within and across racial groups. *Prev Med Rep*. 2015;2:615-621. doi:10.1016/j.pmedr.2015.07.006
- Shariff-Marco S, Klassen AC, Bowie JV. Racial/ethnic differences in self-reported racism and its association with cancer-related health behaviors. *Am J Public Health*. 2010;100(2):364-374. doi:10.2105/AJPH.2009.163899
- Van Houtven CH, Voils CI, Odone EZ, et al. Perceived discrimination and reported delay of pharmacy prescriptions and medical tests. *J Gen Intern Med*. 2005;20(7):578-583. doi:10.1111/j.1525-1497.2005.0123.x
- Trivedi AN, Ayanian JZ. Perceived discrimination and use of preventive health services. *J Gen Intern Med*. 2006;21(6):553-558. doi:10.1111/j.1525-1497.2006.00413.x
- Burgess DJ, Ding Y, Hargreaves M, van Ryn M, Phelan S. The association between perceived discrimination and underutilization of needed medical and mental health care in a multi-ethnic community sample. *J Health Care Poor Underserved*. 2008;19(3):894-911. doi:10.1353/hpu.0.0063
- Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low health literacy and health outcomes: an updated systematic review. *Ann Intern Med*. 2011;155(2):97-107. doi:10.7326/0003-4819-155-2-201107190-00005
- Valery PC, Bernardes CM, Hayward KL, et al. Poor disease knowledge is associated with higher healthcare service use and costs among patients with cirrhosis: an exploratory study. *BMC Gastroenterol*. 2022;22(1):340. doi:10.1186/s12876-022-02407-6
- Kutner M, Greenberg E, Jin Y, Paulsen C. *The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy*. NCES 2006-483. US Department of Education; 2006. Accessed October 29, 2022. <https://nces.ed.gov/pubs2006/2006483.pdf>
- Chaudhry SI, Herrin J, Phillips C, et al. Racial disparities in health literacy and access to care among patients with heart failure. *J Card Fail*. 2011;17(2):122-127. doi:10.1016/j.cardfail.2010.09.016
- Sentell T, Braun KL. Low health literacy, limited English proficiency, and health status in Asians, Latinos, and other racial/ethnic groups in California. *J Health Commun*. 2012;17(suppl 3):82-99. doi:10.1080/10810730.2012.712621
- Fleary SA, Etienne R. Social disparities in health literacy in the United States. *Health Lit Res Pract*. 2019;3(1):e47-e52. doi:10.3928/24748307-20190131-01
- Stormacq C, Wosinski J, Boillat E, Van den Broecke S. Effects of health literacy interventions on health-related outcomes in socioeconomically disadvantaged adults living in the community: a systematic review. *JBI Evid Synth*. 2020;18(7):1389-1469. doi:10.1124/JBISRI-R-18-00023
- Mantwill S, Monestel-Umaña S, Schulz PJ. The relationship between health literacy and health disparities: a systematic review. *PLoS One*. 2015;10(12):e0145455. doi:10.1371/journal.pone.0145455
- Ferguson B. Health literacy and health disparities: the role they play in maternal and child health. *Nurs Womens Health*. 2008;12(4):286-298. doi:10.1111/j.1751-486X.2008.00343.x
- Virtual research meeting: assessing patient experience for insights into enhancing equity in healthcare. Agency for Healthcare Research and Quality. September 22, 2022. Accessed October 29, 2022. <https://www.ahrq.gov/cahps/news-and-events/research-meetings/assessing-patient-experience.html>
- Advancing health equity: a new measurement framework for Medicaid. National Committee for Quality Assurance blog. September 15, 2022. Accessed October 29, 2022. <https://www.ncca.org/blog/advancing-health-equity-a-new-measurement-framework-for-medicaid>
- BRFSS questionnaires. CDC. Updated August 29, 2023. Accessed December 27, 2023. <https://www.cdc.gov/brfss/questionnaires/index.htm>

24. Morris NS, MacLean CD, Chew LD, Littenberg B. The Single Item Literacy Screener: evaluation of a brief instrument to identify limited reading ability. *BMC Fam Pract*. 2006;7:21. doi:10.1186/1471-2296-7-21
25. Haas A, Elliott MN, Dembosky JW, et al. Imputation of race/ethnicity to enable measurement of HEDIS performance by race/ethnicity. *Health Serv Res*. 2019;54(1):13-23. doi:10.1111/1475-6773.13099
26. Waldo DR. Accuracy and bias of race/ethnicity codes in the Medicare enrollment database. *Health Care Financ Rev*. 2004;26(2):61-72.
27. Schaffler J, Leung K, Tremblay S, et al. The effectiveness of self-management interventions for individuals with low health literacy and/or low income: a descriptive systematic review. *J Gen Intern Med*. 2018;33(4):510-523. doi:10.1007/s11606-017-4265-x
28. Speirs KE, Messina LA, Munger AL, Grutzmacher SK. Health literacy and nutrition behaviors among low-income adults. *J Health Care Poor Underserved*. 2012;23(3):1082-1091. doi:10.1353/hpu.2012.0113
29. Shapiro JR. Calendar year (CY) 2024 resource and cost-sharing limits for low-income subsidy (LIS) - correction. CMS. November 30, 2023. Accessed December 27, 2023. <https://www.cms.gov/files/document/lis-memo.pdf>
30. Tarazi W, Welch WP, Nguyen N, et al. Medicare beneficiary enrollment trends and demographic characteristics. Office of the Assistant Secretary for Planning and Evaluation. Issue brief HP-2-22-08. March 2, 2022. Accessed October 29, 2022. <https://aspe.hhs.gov/sites/default/files/documents/f81aafba0b331c71c6e8bc66512e25d/medicare-beneficiary-enrollment-ib.pdf>
31. Canterberry M, Figueroa JF, Long CL, et al. Association between self-reported health-related social needs and acute care utilization among older adults enrolled in Medicare Advantage. *JAMA Health Forum*. 2022;3(7):e221874. doi:10.1001/jamahealthforum.2022.1874
32. Martino SC, Elliott MN, Dembosky JW, et al. *Racial, Ethnic, and Gender Disparities in Health Care in Medicare Advantage*. CMS Office of Minority Health; April 2020. Accessed October 29, 2022. <https://www.cms.gov/files/document/2020-national-level-results-race-ethnicity-and-gender-pdf.pdf>
33. The Accountable Health Communities health-related social needs screening tool. CMS. Accessed October 29, 2022. <https://innovation.cms.gov/files/worksheets/ahcm-screeningtool.pdf>
34. Hall MH, Matthews KA, Kravitz HM, et al. Race and financial strain are independent correlates of sleep in midlife women: the SWAN sleep study. *Sleep*. 2009;32(1):73-82.
35. Hager ER, Quigg AM, Black MM, et al. Development and validity of a 2-item screen to identify families at risk for food insecurity. *Pediatrics*. 2010;126(1):e26-e32. doi:10.1542/peds.2009-3146
36. Anderson GO, Thayer C. Loneliness and social connections: a national survey of adults 45 and older. AARP. September 2018. Accessed October 29, 2022. <https://www.aarp.org/research/topics/life/info-2018/loneliness-social-connections.html>
37. Martino SC, Mathews M, Damberg CL, et al. Rates of disenrollment from Medicare Advantage plans are higher for racial/ethnic minority beneficiaries. *Med Care*. 2021;59(9):778-784. doi:10.1097/MLR.0000000000001574
38. DuGoff E, Chao S. What's driving high disenrollment in Medicare Advantage? *Inquiry*. 2019;56:46958019841506. doi:10.1177/0046958019841506
39. McCullagh P, Nelder JA. *Generalized Linear Models*. 2nd ed. Chapman & Hall/CRC; 1989.
40. Olajiwola JN. Five keys to realizing health equity in US health plans. *Health Affairs Forefront*. May 20, 2021. Accessed October 30, 2022. <https://www.healthaffairs.org/doi/10.1377/forefront.20210518.626084/full/>
41. Fernandez DM, Larson JL, Zikmund-Fisher BJ. Associations between health literacy and preventive health behaviors among older adults: findings from the health and retirement study. *BMC Public Health*. 2016;16:596. doi:10.1186/s12889-016-3267-7
42. Li CC, Matthews AK, Yen PS, Chan YF, Dong X. The influence of perceived discrimination in healthcare settings on psychological distress among a diverse sample of older Asian Americans. *Aging Ment Health*. 2022;26(9):1874-1881. doi:10.1080/13607863.2021.1958146
43. Olajiwola JN, Rastetter M. Aiming for health equity: the bullseye of the quadruple aim. *J Hosp Manag Health Policy*. 2021;5:11. doi:10.21037/jhmhp-20-101

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