Measurement of Health Insurance Literacy and Identification of Its Correlates Among Working-Age Cancer Survivors in the US

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BACKGROUND

- The health insurance environment can be complex for cancer survivors and presents unique challenges that highlight the importance of health insurance literacy (HIL) in health insurance navigation.
- HIL is a concept related to both health literacy and financial literacy. It involves making informed health decisions based on healthcare needs, selecting optimum health coverage, and using a health plan effectively to access necessary care while protecting individuals or families against the risk of catastrophic healthcare expenses.
- Many studies use varied, single-item measures for HIL evaluations that provide a gross estimate of HIL. Findings from such assessments have limited generalizability and do not point towards actionable targets for HIL improvement initiatives.
- HIL is identified as a modifiable risk factor of cancer-related financial hardship.[1]
  - Thus, it is often evaluated as a predictor or correlate of financial hardship, which sidelines its evaluation as an independent, cost-related literacy construct and limits identification of salient factors associated with HIL.

OBJECTIVE

- To measure the HIL of working-age cancer survivors (WACS) aged 27-64 years in the United States and identify sociodemographic, clinical, and health insurance–related correlates of HIL in this population.

METHODS

- A cross-sectional study was conducted using a national convenience sample recruited from an online panel of cancer survivors maintained by Rare Patient Voice, LLC.
- Eligible respondents were required to be aged 27-64 years and currently receiving/received cancer treatment within last 5 years. Those with a recent diagnosis of nonmelanoma skin cancer were excluded.
- Data were collected using an online survey from January through March 2022.
- HIL was measured using the 21-item HIL Measure (HILM).[2] It consists of 4 subscales across 2 domains: Selecting Health Insurance and Using Health Insurance (Figure 1):
  - Confidence subscales: Confidence Choosing Health Plans (Confidence-CHP) and Confidence Using Health Plans (Confidence-UHP)
  - Likelihood of behavior subscale: Comparing Health Plans (Compare-HP) and Proactive Use of Health Plans (Proactive-UHP)
- Responses were measured on a 5-point response format with "Don't know" assigned a score of 0. Subscale-specific total scores were averaged over the total number of subscale items to have a uniform score range of 0-4 for each subscale. An overall HIL score was calculated as the mean of subscale scores ranging from 0 to 4.

Figure 1.
Structure and Subscales of the Health Insurance Literacy Measure

Health Insurance Literacy Measure
→ Selecting Health Insurance → Confidence Choosing Health Insurance
→ Selecting Health Insurance → Comparing Health Insurance
→ Using Health Insurance → Confidence Using Health Insurance
→ Using Health Insurance → Proactive Use of Health Insurance

Statistical Analysis

- Psychometric properties of the HILM were assessed prior to HIL measurement.
  - The internal consistency reliability of the overall HILM and its subscales was assessed using McDonald's omega (ω) to account for the ordinal nature of the response format.
  - The factorial validity of the HILM was assessed using confirmatory factor analysis to evaluate the fit of the original 4-factor model in our study sample.[2] All 4 factors were allowed to intercorrelate.
- Correlates of HIL assessed included sociodemographic and clinical characteristics, financial skills (FS) score (measured using the Bureau of Consumer Financial Protection's 5-item Financial Skills Scale), and experience of health insurance challenges (HICs) in past 12 months.
- Multivariable general linear models were used to evaluate associations between respondent characteristics and standardized overall and subscale-specific HIL scores (i.e., Y-standardization).

RESULTS

Study Population

- 495 initial screening responses were collected from 1,342 invitations (response rate, 36.9%) sent for study participation. The final analytic sample included 309 WACS after excluding 159 respondents who did not meet the selection criteria and 27 with missing data or incomplete responses.
- The median age of the study cohort was 52 years; most WACS were female (70.9%), White (80.9%), and residing in the South (36.6%).
- 38.8% of respondents were diagnosed with some form of gynecological cancer (i.e., breast, endometrial, ovarian, or cervical cancer). Most WACS (76.4%) were receiving active cancer treatment at the time of data collection.
- The majority were working full-time or part-time (47.3%) and had employer-sponsored health insurance (ESI) (48.5%); 14.6% had Medicare, 12.0% had Medicaid, 17.2% had ≥ 2 health plans, and 7.8% had other health insurance.
- Most WACS (61.5%) reported experiencing ≥ 1 HIC (Table 1).

Table 1. Types of Health Insurance Challenges Experienced in Past 12 Months

Types of Health Insurance Challenges	n	(%)
At least one of the following challenges	190	61.5%
Seeking authorization from the health plan for healthcare services or prescription drugs	117	37.9%
Seeking information from the health plan about covered services and insurance payments	99	32.0%
Following up with health plan to try to resolve a problem with medical bill	78	25.2%
Seeking information from the health plan about in-network providers	50	16.2%
Following up with health plan/medical provider about issues with medical coding	40	12.9%
Following up with health plan to try to resolve a problem with a premium payment	16	5.2%
Other	15	4.9%

Overall and Subscale-Specific HIL Scores

- Mean overall HIL and subscale-specific scores for the entire sample and stratified by HICs are presented in Figure 2.
- With a possible range of 0-4, the mean (standard deviation [SD]) overall HIL score of WACS in our study was 2.83 (0.67).
- Respondents had lower scores on the subscales assessing confidence compared with those assessing the likelihood of behavior: Confidence-CHP (mean [SD], 2.48 [0.83]) and Confidence-UHP (mean [SD], 2.43 [0.94]) versus Compare-HP (mean [SD], 3.35 [0.79]) and Proactive-UHP (mean [SD], 3.06 [0.77]).
- Similarly, average overall HIL scores were significantly lower among those who reported experiencing ≥ 1 HIC compared with WACS who did not report experiencing any HICs in the past 12 months (3.04 [0.59] vs. 2.70 [0.68]; *P* < 0.001), driven mainly by lower scores on confidence-assessing subscales (Figure 2).

Figure 2. Mean HIL Scores Stratified by Past Experience of Health Insurance Challenges
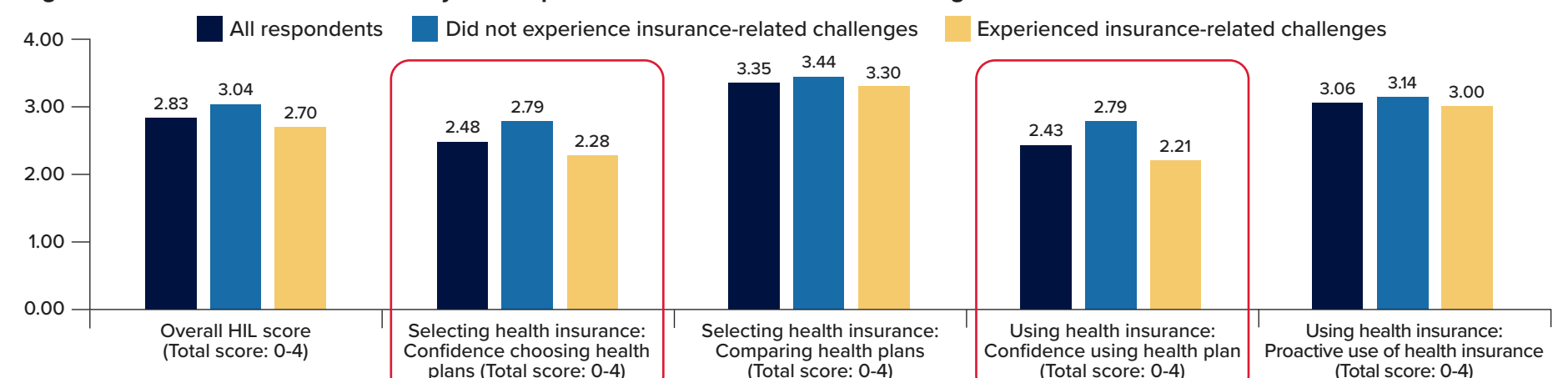
Correlates of HIL

Correlates of Overall HIL

- Younger age (27-40 years), experiencing HICs in past 12 months, and FS scores were significantly associated with overall HIL.
  - Younger age (27-40 years) (estimate, −0.33; 95% CI, −0.58 to −0.07) and experiencing HICs in past 12 months (estimate, −0.27; 95% CI, −0.48 to −0.05) showed a negative association with overall HIL.
  - FS scores were positively associated with overall HIL scores (estimate, 0.04; 95% CI, 0.04 to 0.05), indicating that WACS reporting higher financial skills were likely to have higher overall HIL.
- Although not statistically significant, health insurance type of WACS showed a mixed association with direction of the effect. Having ≥ 2 health plans (e.g., dual Medicaid and Medicare enrollment) or some other type of health insurance (e.g., TRICARE) was associated with lower HIL scores compared with having ESI coverage.

Figure 3. Key Correlates of Overall HIL

Key Correlates of HIL Subscales

Age, experiencing HICs in past 12 months, health insurance type, and FS scores were identified as significant correlates of HIL subscales:

Age

Younger WACS aged 27-40 years were less likely to engage in proactive use of a health plan compared with those aged 51-64 years (estimate, −0.38; 95% CI, −0.68 to −0.07).

Experiencing HICs in past 12 months

Experiencing HICs was associated with lower confidence in choosing health plans (estimate, −0.36; 95% CI, −0.58 to −0.14) as well as lower confidence about using health plans (estimate, −0.39; 95% CI, −0.62 to −0.16).
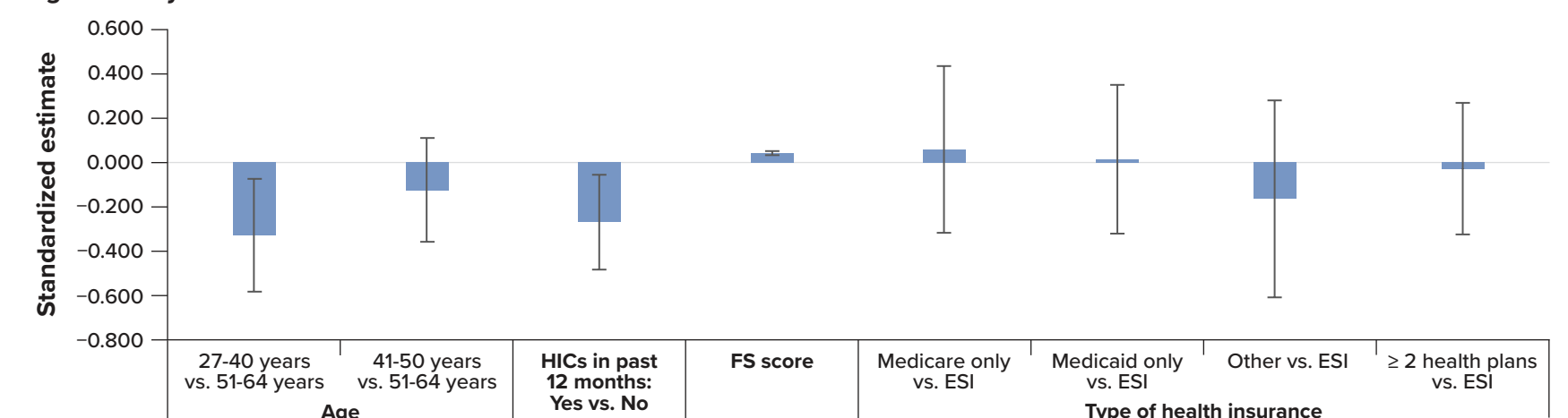
Health insurance type

Having Medicare was associated with higher confidence in choosing health plans (estimate, 0.52; 95% CI, 0.16-0.88). However, it was also associated with lower likelihood of proactive use of health insurance (estimate, −0.44; 95% CI, −0.86 to −0.03). Similarly, having ≥ 2 health plans was associated with lower likelihood of proactive health insurance use (estimate, −0.39; 95% CI, −0.77 to −0.01).

FS Score

FS scores were positively associated with all HIL subscales—Confidence-CHP (estimate, 0.04; 95% CI, 0.03-0.05), Compare-HP (estimate, 0.03; 95% CI, 0.02-0.04), Confidence-UHP (estimate, 0.04; 95% CI, 0.03-0.05), and Proactive-UHP (estimate, 0.03; 95% CI, 0.02-0.04).

Psychometric Properties of HILM

- HILM and its subscales were found to have adequate internal reliability in our sample: overall HILM (ω = 0.93), Confidence-CHP (ω = 0.88), Compare-HP (ω = 0.90), Confidence-UHP (ω = 0.92), and Proactive-UHP (ω = 0.78).
- The 4-factor model proposed by Paez et al.[2] for the HILM was found to be valid in our study, with a good model fit indicated by the following indices: comparative fit index = 0.98, root mean square error of approximation (90% confidence interval [CI]) = 0.07 (0.06-0.08), and standardized root mean square residual = 0.05.[3]
- Moderate to high and statistically significant bivariate correlations ranging from 0.47 to 0.86 were observed between the HILM subscales.

CONCLUSION

- WACS in our study demonstrated moderate HIL driven by lower self-confidence regarding health plan selection and utilization. Furthermore, experiencing HICs in the past 12 months was a significant correlate of lower self-confidence.
- In addition to affecting WACS' confidence about health insurance navigation, consequences of these HICs involve risk of surprise medical bills, high out-of-pocket expenses, and delayed or denied healthcare with more severe downstream consequences for health outcomes.
- Younger age was found to be a significant correlate of lower overall HIL and lower likelihood of proactive health insurance use.
- These findings highlight an interventional area for patient empowerment and HIL education to improve confidence and skills necessary for health insurance navigation, especially for younger WACS.
- Mixed associations were seen between health insurance type and HIL and its components. This finding underscores that different health insurance types may present unique challenges to WACS while navigating cancer care and merit future research.
- Study findings may aid health personnel such as financial navigators and counselors, medical social workers, and insurance counselors who support WACS and their caregivers with health insurance navigation over the course of cancer care.

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Presented at: ISPOR 2024; 5-8 May 2024; Atlanta, GA, United States