Motivation for a Health-Literate Health Care System—Does Socioeconomic Status Play a Substantial Role? Implications for an Irish Health Policymaker

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In this article, the authors argue that the association between socioeconomic status and motivation for a health-literate health care system has implications for health policymakers. As Ireland now undergoes health care reform, the authors pose the question, “Should policymakers invest in health literacy as predominately a health inequalities or a public health issue?” Data from 2 cohorts of the Survey of Life-style, Attitudes and Nutrition (1998 and 2002) were used to construct a motivation for a health-literate health care system variable. Multivariate logistic regressions and concentration curves were used in the analyses of this variable. Of the 12,513 pooled respondents, 46% sought at least 1 attribute on a health-literate health care system. No discernible trend emerged from the main independent variables—social class grouping, medical card eligibility, level of education, and employment—in the regression analyses. The concentration curve, for 2002 data, graphically showed that the motivation for a health-literate health care system is spread equally across the income distribution. This analysis and more recent data suggest that health literacy in Ireland should be viewed predominately as a public health issue with a policy focus at a system level.

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The term *health literacy* has been a source of considerable confusion and debate (Baker, 2006). A recent systematic review identified 17 definitions and 12 conceptual models (Sørensen et al., 2012). The following is an often-cited definition of health literacy: “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Ratzan & Parker, 2000, p. vi). This definition focuses on individuals and their cognitive abilities to navigate the health care system. A decade later, the health literacy framework was proposed to encompass the health care system: “One must align skills and abilities [of individuals] with the demands and complexity of the system. When that is accomplished, one has health literacy” (Parker, 2009, p. 92). The research literature has predominately focused on the skills and abilities of individuals. It is now universally accepted that individuals with low health literacy have consistently been associated with poorer health outcomes and poorer use of health care services (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011). However, more attention has been paid to the other side of the health literacy coin—the demands/complexities of the health care system in recent times. Because this supplement focuses on advancing health literacy research, we hope that this article is viewed as a novel empirical health literacy research examining the design of health care systems.

Advocacy for health literacy has grown internationally; the Institute of Medicine in January 2013 held its roundtable discussion in New York, with participation from researchers from around the world.¹ Different approaches to health literacy policy have been taken in different jurisdictions. The Labour Government in the United Kingdom (1997–2010) considered health literacy as part of the Department of Health’s Health Inequalities Strategy (Department of Health, 2008). The U.S. Department of Health and Human Services Secretary promoted a broader national action plan on health literacy (U.S. Department of Health and Human Services, 2010). Health literacy provisions are on the critical path to achieving the goals of health care reform (Affordable Care Act; Parekh, 2011). In Ireland, health literacy is currently not recognized in formal government health policy (National Adult Literacy Agency, n.d.). However, because major reforms in health care are currently under way, it is likely that health literacy will enter the policy discourse given the growing advocacy community.²

Ireland has a nuanced two-tier health care system with public and private sectors. However, the system remains predominantly tax funded. In 2006, 78.3% of total health expenditure (public and private) was raised from taxation and the remaining components are from private sources including insurance premiums and out-of-pocket contributions (McDaid, Wiley, Maresso, & Mossialos, 2009).³ In an ideal scenario, a health literacy policy would have a public health component and a health inequalities component. However, this article aims to answer the research question about which strategy should be chosen the principal approach—that is, should Irish health policymakers view health literacy as predominately a public health or a health inequalities issue? We do this by analyzing nationally representative survey data and

¹<http://www.iom.edu/Activities/PublicHealth/HealthLiteray/2012-SEP-24.aspx>

²The World Health Organization’s regional office for Europe published a report making the case for policy action to strengthen health literacy and highlighted Ireland’s multistakeholder approach that includes the National Adult Literacy Agency, the Department of Health, the Health Service Executive, academia, and the pharmaceutical company Merck Sharpe & Dolme.

³The latest Organisation for Economic Co-operation and Development report states that for 2008 in Ireland, 76.9% of total health expenditure was government funded (Organisation for Economic Co-operation and Development, 2010).

looking at socioeconomic characteristics of respondents in relation to responses to questions about strategies to improve their general health.

Method

We constructed a variable that represents a respondent's motivation for a health-literate health care system. We examined this variable across the socioeconomic gradient. Part of this approach is akin to socioeconomic/income related inequality in health literature which focuses on the variation in health as one moves along the distribution of income (Kakwani, Wagstaff, & van Doorslaer, 1997; van Kippersluis, O'Donnell, van Doorslaer, & van Ourti, 2010). We also examined the association between having a motivation for a health-literate health care system and preventive health care utilization.

Data Source

We used two cohorts of nationally representative household survey data—Survey of Lifestyle, Attitudes and Nutrition (SLAN) 1998 and 2002. This health and lifestyle survey aimed to describe the health-related lifestyle behaviors (i.e. exercise, smoking, drinking, eating habits) of a cross-section of Irish adults. A detailed methodology report has been described elsewhere (Friel, Nic Gabhainn, & Kelleher, 1999; Kelleher et al., 2003). Briefly, SLAN was a cross-sectional survey, using a stratified probability sampling design. A two-stage random sample was drawn from the adult population in each of the Republic of Ireland's 26 counties and was proportionately distributed according to the urban/rural breakdown in each county. The sampling unit within each county was the district electoral divisions and the required number of urban and rural district electoral divisions was ascertained on the basis of census data. In each district electoral division, a random sample of 50 Irish adults 18 years of age and older on the electoral register was generated by a subsidiary company of the national postal system.⁴ In 1998, each selected adult was sent a self-administered questionnaire, plus explanatory letters and prepaid reply envelopes, of which 6,539/12,733 (51.4%) were returned. Four years later (2002), a similar survey was conducted and 5,992/11,212 (53.4%) persons participated. There was remarkable between-survey consistency in many variables enabling the data to be pooled for analysis purposes (Shiely et al., 2010). Our final analytic sample was 12,513 because 18 respondents were removed as a result of incompleteness of basic demographic information. We are reasonably confident that the data sets gave a representative profile of the Irish population at each time period.

Survey Items

Motivation for a Health-Literate Health Care System Variable

This variable was derived from two questions from the general health section of the surveys. The first question was framed as follows: "I think my own health would be better if I had" The respondent was given 16 prompted answers, including three answers that elicited a motivation for a health-literate health care system: (a) "... better

⁴The sample was generated randomly from the Irish electoral register supplied by Precision Marketing Information Ltd., a subsidiary of An Post (The Irish Postal Company).

information about where to go for health care,” (b) “... easier to read health information,” and (c) “... better information about how to stay healthy.” The second question was framed as follows: “Which of the following do you think prevents people from improving their general health?” Two aspects of the motivation for a health-literate health care system answers were (a) “... not being able to read and understand information” and (b) “... lack of information.” In addition, there are five other options and an “other, please specify” option. The constructed motivation for a health-literate health care system variable was made binary, reflecting whether a respondent had ticked any of the outlined five options (i.e., any of the three on the first question or the two on the second question).

Independent Variables

The basic conceptual model (Figure 1) was based on individual characteristics that are likely to motivate a respondent’s likelihood to desire a health-literate health care system in the SLAN survey. It was probable that respondents would have an array of other unobservable variables (e.g., extent of previous experiences with the health care system) that are not captured in the survey. Therefore, the SLAN data was not suitable in establishing the causal factors of the motivation for desiring a health-literate health care system.

Of the socioeconomic status variables, the main independent variable in the regression analysis was “social class group”—this was determined on the basis of the occupation of the principle wage-earner in the household and was categorized on the basis of the Irish Census 1996 classification system. Other variables were characterized under the following umbrella terms: demographic (gender, age group, marital status, number of children, locality), socioeconomic status [social class, education, income (2002 only), private health insurance (2002 only), eligibility to free public medical services], risk behavior and attitude (smoking, alcohol consumption, ever

Figure 1. This simplistic conceptual model outlines the characteristics of respondents available from SLAN surveys that contribute to a respondent’s motivation for a health literate health care system.

drug use, exercise and nutrition), health status, psychosocial stress (specific health conditions, long-term illnesses, and disability) and preventive health care utilization (general check-up in the past 3 years, last time blood pressure or blood cholesterol was checked).

In Ireland, primary health practitioner and other medical services⁵ are provided free-of-charge to all below a set level of income. This entitlement is generally referred to as possessing the general medical services (GMS) card. Eligibility at the time of the surveys was assessed on a case-by-case basis at regional health board level⁶ and factors like age income and postretirement means were taken into account. In 2003, it was reported that approximately a third of the population were entitled to the benefits of the scheme (Kelleher, Friel, Nic Gabhainn, & Tay, 2003). GMS eligibility is a robust proxy of disadvantage,⁷ as comprehensive entitlement to health care in the Republic of Ireland is means-tested (Kelleher, 2007). Private health insurance in Ireland mostly provides supplementary cover (access to private hospitals, semiprivate or private accommodation, and faster access), although it also provides some complementary cover for primary care (Turner & Shinnick, 2013).

Data Analysis

We began by analyzing the bivariate associations between the binary motivation for a health-literate health care system variable and the sociodemographic variables. Then, we ran various multivariate logistic regressions, adding independent variables in a stepwise manner starting with demographic variables followed by socioeconomic status, risk behavior and attitude, health status, and psychosocial stress variables.

Given that only the 2002 data set contains a self-reported income variable,⁸ an alternative approach was undertaken to assessing inequalities by ranking individuals from the poorest to richest and plotting their cumulative share of motivation for a health-literate health care system variable. It should be noted that the income variable was transformed into an equivalence income variable on the basis of number of adults and children living in the household. A concentration curve akin to those used to show health inequalities was constructed (Kakwani et al., 1997; Wagstaff, Paci, & van Doorslaer, 1991). Concentration curves are a graphical way to illustrate whether the variable being analyzed has a pro-rich or pro-poor bias. In other words, it plots

⁵Free access to inpatient, outpatient, and emergency room services in all public hospitals. Prescription medicines were also available for free at the time of the surveys. As of January 2013, a government copayment of €1.50 per prescription medicine is imposed on GMS card-holders up to a ceiling of €19.50 per month.

⁶Since 2005, the Health Service Executive, Ireland's public health service body, assesses GMS eligibility at central level.

⁷Entitlement to a GMS card for adults older than 70 years of age was put in place in 2001, and this may affect the reliability of this variable as a proxy for disadvantage for the 2002 data set. According to the Central Statistics Office, the proportion of adults older than 70 years of age with both medical card and private health insurance in 2001 was 10% and increased to 33% by 2010. In 2001, 4% of adults older than 70 years of age had neither a GMS card nor private health insurance that decreased to 2% by 2010. Retrieved from <http://www.cso.ie/en/media/csoie/releasespublications/documents/labourmarket/2010/healthstatusq32010.pdf>

⁸"What is your household's total net income per week, i.e. the take-home family weekly income from all sources (include social benefits, etc)?" There were 15 response options available from lowest (*less than €65*) to highest (*€1,900 or more*).

shares of the motivation variable against quintiles of the income variable. If everyone, irrespective of his or her income, has the same value of the motivation variable, the concentration curve will be a 45-degree line. If the motivation variable takes higher values among poorer people, the concentration curve will lie above the line of equality and have a pro-poor bias. If the converse were observed, the concentration curve would give a pro-rich bias.

A concentration index is a measure of the magnitude of the inequality (O'Donnell, van Doorslaer, Wagstaff, & Lindelow, 2008). The concentration index is defined as twice the area between the concentration curve and the line of equality. So, in the case in which there is no income-related inequality, the concentration index is zero. The origin of this type of research comes from income inequality (e.g., Lorenz curve and the associated gini coefficient; Atkinson, 1970).

Finally, the SLAN data allowed us to examine the motivation variable and its relationship with certain preventive health care utilization practices. In the United States, the Centers for Disease Control and Prevention states that it is advisable that all adults have an annual general check-up by their primary care physician. The SLAN survey⁹ asked the following questions: "Have you had a general health checkup in the last 3 years?" and "When was the last time you had your blood pressure checked?" The Centers for Disease Control and Prevention also recommends that men older than 35 years of age and women older than 45 years of age should have their blood cholesterol checked yearly. The SLAN survey asked: "When did you last have your blood cholesterol checked?" All analyses were conducted in Stata 11.2 software (StataCorp, College Station, Texas) with the specialist *glcurve* program used to construct the concentration curves and indices.

Results

The percentage of the combined pooled sample that expressed a motivation for a health-literate health care system was 45.7% (5,718/12,513). Of these, 3,228 respondents (25.8%) ticked one attribute, 1,528 (12.2%) ticked two attributes, 602 (4.8%) ticked three attributes, 257 (2.1%) ticked four attributes, and 103 (0.8%) ticked all five attributes. This descriptive analysis indicated that nearly half of the surveys' respondents felt that at least one attribute of a health-literate health care system would improve general health.

The bivariate associations between a reported motivation for a health-literate health care system and the main sociodemographic variables are summarized in Table 1. The Pearson's chi-square test for independence showed that all the independent variables were related to the motivation variable at a statistically significant level ($p = .05$), except for private health insurance ($p = .08$). Those who were older (55+ years), women, those from social class of unskilled/semiskilled labor, those with just primary education, those eligible for medical card, those living in an urban area and the unemployed were proportionally more likely to report a motivation for a health-literate health care system.

We have reported various multivariate logistic regression models in this article (Table 2). The inclusive model (Model 4) shows that older respondents (55+ years of

⁹For general check-up, the only answers were yes/no. For blood pressure and blood cholesterol questions, the prompted answers were the following: up to 3 months ago, up to 6 months ago, up to 1 year ago, up to 3 years ago, and never. We made this variable binary.

Table 1. Summary of the bivariate associations between a reported motivation for a health-literate health care system and sociodemographic explanatory variables

Variable	Category	Count ¹	Percentage of respondents motivated ≥ 1 attribute of health-literate health care system	Chi-square (<i>df</i>)
Gender	Female	6,892	47.5	11.26 (1)*
	Male	5,379	44.4	
Age group (years)	18–34	3,893	43.6	26.03 (2)*
	35–54	5,028	45.7	
	55+	3,317	49.6	
Social class	SC 1/2	4,091	44.3	10.76 (2)*
	SC 3/4	3,516	45.1	
	SC 5/6	1,737	48.9	
Education	Primary	2,190	51.7	34.76 (2)*
	Secondary	5,459	45.0	
	Tertiary	3,644	44.2	
General medical services status	Not eligible	8,360	44.3	37.91 (1)*
	Eligible	3,416	50.5	
Private health insurance (2002 data)	Yes	3,148	46.5	2.92 (1), <i>ns</i>
	No	2,461	48.8	
Employment	Unemployed	638	50.2	25.64 (2)*
	Employed	6,359	44.0	
	Other (retired/student)	4,452	48.5	
District electoral division type	Urban	5,340	47.3	6.87 (1)*
	Rural	6,132	44.9	

Note. SC 1/2 = professional, managerial, and technical; SC 3/4 = nonmanual, skilled manual; SC 5/6 = semiskilled and unskilled manual.

* $p < .05$.

¹Count based on full case analysis.

age) or those who have ever used drugs were more likely to be motivated to want a health-literate health care system. Conversely, those who self-reported to have good or very good quality of life or those who were previously married (although this might just be a statistical quirk, given that this is a small subgroup) were less likely to be motivated to want such a system. The socioeconomic status variables, such as social class and having a medical card, were not statistically significant in this model.

The concentration curve (Figure 2) showed that the motivation for a health-literate health care system had a very slight pro-poor bias and that the concentration index (–0.013) was very close to equality (zero). This suggests that the motivation for a health-literate health care system was seen across the socioeconomic status of this nationally representative sample.

Table 2. Stepwise multivariate logistic regression of the motivation for health-literate health care system variable of SLAN data 1998 and 2002

Motivation for a health literate health care system	Model 1: Demographics (n = 10,978)	Model 2: Socioeconomic status (n = 7,888)	Model 3: Risk behavior/health/ psychosocial stress (n = 5,586)	Model 4: All variables (n = 3,695)
Gender				
Male	Ref			Ref
Female	1.14 [1.05–1.23]*			1.13 [0.98–1.31]
Age group (years)				
18–34	Ref			Ref
35–54	1.14 [1.03–1.26]*			1.12 [0.94–1.35]
55+	1.34 [1.18–1.51]*			1.55 [1.15–2.08]*
Marital status				
Single	Ref			Ref
Married	0.92 [0.83–1.02]			1.00 [0.82–1.21]
Previously married	0.92 [0.79–1.06]			0.70 [0.50–0.97]*
Cohabiting	0.97 [0.80–1.18]			0.86 [0.63–1.15]
District electoral division type				
Rural	Ref			Ref
Urban	1.10 [1.02–1.19]*			1.11 [0.98–1.27]
Living arrangements				
Alone	Ref			Ref
With others	0.94 [0.86–1.04]			0.91 [0.75–1.10]
Social class groups				
SC 5/6 (semiskilled/unskilled labor)		Ref		Ref
SC 3/4 (nonmanual/skilled manual operator)		0.91 [0.80–1.05]		0.88 [0.71–1.07]
SC 1/2 (professional, managerial + technical)		0.95 [0.83–1.09]		0.82 [0.66–1.01]
Education				
None/primary		Ref		Ref
Secondary		0.79 [0.68–0.92]*		0.93 [0.70–1.22]
Tertiary		0.80 [0.68–0.94]*		0.93 [0.68–1.27]
Employment				
Unemployed		Ref		Ref
Employed		0.85 [0.68–1.07]		0.81 [0.59–1.12]
Retired/student		0.95 [0.75–1.18]		0.77 [0.55–1.08]
Medical card				
No		Ref		Ref
Yes		1.08 [0.96–1.23]		0.92 [0.75–1.13]
Household tenure				
Rented/other		Ref		Ref
Owned with mortgage/outright		0.92 [0.82–1.04]		0.91 [0.76–1.08]

(Continued)

Table 2. (Continued)

Motivation for a health literate health care system	Model 1: Demographics (<i>n</i> = 10,978)	Model 2: Socioeconomic status (<i>n</i> = 7,888)	Model 3: Risk behavior/health/ psychosocial stress (<i>n</i> = 5,586)	Model 4: All variables (<i>n</i> = 3,695)
Smoking				
Nonsmoker			Ref	Ref
Smoker			0.88 [0.78–0.99]*	0.94 [0.81–1.10]
Physical activity				
No exercise			Ref	Ref
Exercise			1.09 [0.94–1.27]	1.02 (0.85–1.25)
Alcohol use				
Within limits			Ref	Ref
Exceed limits			0.90 [0.79–1.02]	0.93 [0.79–1.09]
Drug use				
No			Ref	Ref
Yes			1.10 [0.97–1.27]	1.19 [1.01–1.41]*
Fried food				
Less than once per week			Ref	Ref
More than once per week			0.89 [0.80–0.99]*	0.95 [0.82–1.09]
Self-reported health				
Poor			Ref	Ref
Fair			1.17 [0.62–2.21]	0.52 [0.29–1.29]
Good			1.35 [0.72–2.57]	0.58 [0.23–1.48]
Very good			1.44 [0.75–2.75]	0.66 [0.26–1.68]
Excellent			1.33 [0.69–2.56]	0.62 [0.25–1.61]
Quality of life				
Very poor			Ref	Ref
Poor			0.66 [0.31–1.41]	0.57 [0.22–1.49]
Neither poor or good			0.47 [0.23–0.84]*	0.47 [0.21–1.03]
Good			0.37 [0.20–0.69]*	0.45 [0.21–0.95]*
Very good			0.33 [0.18–0.61]*	0.39 [0.19–0.81]**
Satisfaction with health				
Very dissatisfied			Ref	Ref
Dissatisfied			0.54 [0.31–0.95]*	0.70 [0.34–1.42]
Neither satisfied nor dissatisfied			0.61 [0.35–1.07]	0.81 [0.40–1.64]
Satisfied			0.65 [0.38–1.14]	0.87 [0.43–1.75]
Very satisfied			0.64 [0.37–1.14]	0.79 [0.38–1.62]
Specific health conditions				
No specific condition			Ref	Ref
At least one specific condition			1.07 [0.95–1.22]	1.02 [0.87–1.20]
Long-term illnesses/disabilities				
No			Ref	Ref
Yes			1.35 [1.10–1.67]*	1.14 [0.87–1.50]

p* > .05. *p* > .01.

Figure 2. Concentration curve: Desire for a health-literate health care system (2002 SLAN data only).

In terms of preventative health care utilization, men who did not have a medical card were the only subgroup in which having expressed a motivation for a health-literate health care system had a statistically significant effect on being more likely to have had a general check-up (Table 3). In all preventative health care utilization analyses, the main predictive variable was for those individuals with a specific chronic health condition (data not presented). No other variable was consistently statistically significant at the 5% level.

Discussion

Health literacy policy is multifaceted. Individuals, providers, and systems all should play a role in shaping health literacy policy. Our analyses indicated that nearly half of the respondents expressed some motivation for a health-literate health care system. This was an interesting finding, highlighting that people do believe that having better/easier information about health and health care would improve general health. The question that we tried to answer is whether those respondents come from a certain sector of Irish society. On the basis of logistic regression and concentration curve analyses, we felt the SLAN data showed that motivation for a health-literate health care system comes from across the socioeconomic gradient.

In our subsequent analysis looking at preventative health care utilization, the odds of the subgroup of men without a GMS card, that had expressed a motivation for health-literate health care system, were statistically more likely ($OR = 1.23$) to have had a general check-up in the past 3 years. This result was not replicated in any other preventative health care practices such as having blood pressure or blood cholesterol measured. Moral hazard would play a role in explaining why having a GMS card would reduce a person's motivation for a health-literate health care system—as respondents with a GMS card have free access to health care services. The

Table 3. Logistic regression analysis of preventive health care services and motivation for a health-literate health care system

	<i>n</i>	Motivation_HL OR [95% CI]
General check-up (all ages)		
Male and no medical card	2,301	1.23 [1.03, 1.47]*
Male and medical card	605	0.79 [0.53, 1.19]
Female and no medical card	2,968	1.09 [0.94, 1.27]
Female and medical card	782	1.15 [0.84, 1.59]
Blood pressure (all ages)		
Male and no medical card	2,338	1.27 [0.98, 1.64]
Male and medical card	619	1.08 [0.61, 1.96]
Female and no medical card	3,014	1.12 [0.80, 1.60]
Female and medical card	791	0.92 [0.38, 2.19]
Blood cholesterol (men: 35–64 years old, women: 45–64 years old)		
Male and no medical card	113	0.49 [0.18, 1.35]
Male and medical card	233	1.37 [0.73, 2.58]
Female and no medical card	102	0.96 [0.36, 2.55]
Female and medical card	222	1.28 [0.70, 2.35]

Note. Covariates were marital status, district electoral division, living arrangements, social class groups, education, employment any specified conditions, illness/disability, self-reported health, quality of life, and satisfaction with health. Motivation_HL = motivation for a health-literate health care system. Odds ratio compare those respondents who had expressed a motivation for a health-literate system and those who did not.

* $p > .05$.

other most notable study that looked at preventive health behaviors¹⁰ among older adults showed that the traditional construct of health literacy¹¹ is a mediator in the pathway on explaining racial/ethnic and educational disparities and preventive health behaviors (Bennett, Chen, Soroui, & White, 2009).

Limitations

The SLAN data has a number of important limitations in answering our research questions. The data is now 10–15 years old and would not capture the effect of immigration on public health care services. It is likely that an important component of being a health-literate health care system (i.e., to deliver culturally and linguistically appropriate services) is not substantially addressed by the Irish health care system. Ireland has also experienced a boom-to-bust economic cycle, which has resulted in close to 50% of the population now having a GMS card, a legacy of an entitlement given to adults older than 70 years of age in the boom era and due to financial troubles in the bust (Irish Examiner, 2013).

¹⁰The preventive health behaviors are self-reported influenza vaccine, mammography and dental check-up in the preceding year.

¹¹The National Assessment of Adult Literacy health literacy score consisted of 28 tasks that were grouped into four performance levels: below basic, basic, intermediate, and proficient.

The social class variable was a very crude measure of social standing; hence, other variables such as education, employment, GMS card status, and household tenure were also analyzed in the regression analyses. Self-reported net household income was reported only in 2002, allowing construction of a concentration curve for that time period only.

Irish Policy Narrative

From the demands/complexities side of the health literacy coin, the SLAN analyses suggested that health literacy's role in health policy should be predominately conceptualized as a public health issue. As for the skills/abilities side, the Irish results of the 2011 European Union Health Literacy Survey showed a significant positive association between those with higher health literacy scores¹² and higher social class, education level, and self-reported income in Ireland (Doyle, Cafferkey, & Fullam, 2012). Doyle and colleagues (2012) concluded the following:

Although health literacy is undoubtedly related to markers of social gradient such as income and education, these findings suggest that a direct linear relationship should not be assumed, those with higher incomes and more education are still at risk of low health literacy (p. 79).

Again, this suggests that health literacy's role in Irish health policy should be predominately conceptualized as a public health issue. Therefore, we recommend that the health literacy community and patient advocacy groups lobby policymakers towards this end. A similar conclusion was reached in a U.S. policy document that placed the order of magnitude of the cost of low health literacy to the U.S. economy in the range of \$106–238 billion (Vernon, Trujillo, Rosenbaum, & Debuono, 2007).

Therefore, a health-literate health care system recognizes that individuals who ordinarily have adequate health literacy skills may have difficulty processing and using information when they are in poor health, frightened or otherwise impaired. Health literacy evolves over the life course and has situational and personal determinants. Systems must therefore be redesigned to accommodate the unpredictability of limited health literacy skills (Rudd, 2010). This ethos resonates with the philosopher John Rawls's theory of justice in believing that policy should be particularly attuned to its effect on the least fortunate (Rawls, 1971). Adopting the Rawlsian approach advocates that the standard of care should be reoriented to the needs of health consumers with limited literacy (Vollandes & Paasche-Orlow, 2007).

A top-down policy approach would promote incorporation of health literacy into all planning activities. Irish policymakers could draw inspiration from the Institute of Medicine's (2012) discussion paper, "Ten Attributes of Health-literate Health Care Organizations," which sets out how health care systems can make it easier for people to navigate, understand, and use information and services to take care of their health. Given the recent change in demographics, Irish policymakers should also be cognizant

¹²The European Union Health Literacy Survey developed an instrument to measure health literacy in Europe. This model has four main competencies necessary to be considered health literate. These competencies relate to access, understanding, appraisal, and application. The Newest Vital Sign, a validated measure of functional health literacy, was also used as an instrument to assess respondents' skills and abilities in the European Union Health Literacy Survey (Weiss et al., 2005).

to target certain populations (e.g., recent migrants and the Irish traveling community) with health literacy interventions, which are likely to be underrepresented in surveys. As for future research, the analyses described in this article could also be applied to the Irish results in the European Union Health Literacy Survey, but perhaps more pressing is to coordinate a multistakeholder strategic policy document, that we feel should take a predominately public health view on health literacy to policymakers.

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