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ABSTRACT

Introduction/Background: General self-efficacy (GSE) is the belief in one's ability to perform well. GSE can influence health behavior. Greater understanding of characteristics influencing GSE in the hemophilia population may allow healthcare providers to better influence health behavior. **Methods:** In a cross-sectional study, demographic information and GSE of adult patients with hemophilia was collected. Analysis proceeded from descriptive statistics to bivariable associations and multivariable analysis using linear regression. **Results:** All were men (n=68); 92.7% had hemophilia A and 73.5% had severe disease. Median age was 33.5 years. 73.6% were of white race; 7.4% were Hispanic; 61.8% reported income of <\$50,000; 36.8% had received an undergraduate degree or higher. Median length of time at HTC was 17.0yrs. 25.0% were HIV positive; 57.4% were HCV positive; and 17.7% had history of depression. Median physician trust score was 43.5. Median GSE score was 35. On bivariable analysis, GSE was positively associated with income (p-value 0.054). On multivariable analysis, the association between income and GSE appeared modified by the physician trust score (p-value for interaction 0.059). This model overall accounted for only a small proportion of the variability of GSE between subjects (adjusted R² = 0.095). **Conclusion:** In patients with hemophilia, income and physician trust appear to have a weak effect on patient self-efficacy. Other studied variables do not appear to be associated with self-efficacy in this population. A better understanding of characteristics that promote self-efficacy and thereby facilitate the promotion of healthy behaviors will be important for optimizing the care of patients with hemophilia.

INTRODUCTION

- General self-efficacy (GSE) is the belief in one's ability to perform well.
- Self-efficacy is important for changing health behavior in persons with chronic illnesses (1).
- A higher sense of self-efficacy increases motivation for action (2).
- Hemophilia treatment requires action to treat effectively.
- Greater understanding of characteristics influencing GSE in the hemophilia population may allow healthcare providers to better influence health behavior.

METHODS

- Study Design:** Secondary analysis of a cross-sectional study designed to evaluate adherence and health literacy
- Subjects:** Adults with moderate or severe hemophilia A or B who could speak and read English were enrolled at their annual visit at the Emory/Children's Healthcare of Atlanta Hemophilia Treatment Center (HTC).
- Outcome variable:** GSE was measured using the Schwarzer and Jerusalem GSE scale (3). The GSE scale has 10 items with four responses on a Likert-scale with a total sum ranging from 10 to 40 where the higher score corresponds with higher general self-efficacy.
- Exposure variables:** age, self-reported race, ethnicity, household income, highest level of education completed, length of time seen at this HTC, severity of hemophilia, history of HIV and Hepatitis C, history of depression, and the Wake Forest Physician Trust Scale (WFPTS) scores (4)
- The WFPTS measures the level of the patient's trust of the physician and is composed of 10 items with a five-point Likert-scale with a total sum ranging from 10 to 50, where higher scores indicate greater physician trust.
- Analysis:** GSE score, age, length of time seen at this HTC, and WFPTS score were evaluated as continuous variables. The remaining variables were evaluated as dichotomous variables; annual household income was divided into greater than \$50,000 or less than \$50,000 (since the median household income in the US is \$51,000).
- The bivariable associations between GSE and exposure variables were determined using simple linear regression.
 - Multivariable analysis was completed also using multiple linear regression.

RESULTS

- Descriptive statistics of participant characteristics are outlined in Table 1.
- On bivariable analysis, GSE was positively associated with income (p = 0.062) and with education (p = 0.059).
- On multivariable analysis, higher education was significantly associated with higher GSE (p = 0.013). Subjects who graduated from college or had graduate education had a 2.38 higher GSE score than those with less education.
- On multivariable analysis, the relationship between income and GSE was not significantly modified by the physician trust score (p for interaction = 0.099) nor was the relationship between education and GSE (p for interaction = 0.377).
- However, this model overall accounted for only a small proportion of the variability of GSE between subjects (adjusted R² = 0.094).

Table 1: Subject Characteristics

Characteristic	n (%) or median (IQR)
Male Gender	99 (100%)
Hemophilia A	90 (91%)
Disease Severity	
Moderate	22 (22%)
Severe	77 (78%)
Age (years)	33 (18)
Length seen in Emory HTC (years)*	17 (18)
Race*	
White	63 (69%)
Black	24 (27%)
Asian	3 (3%)
Hispanic Ethnicity*	5 (6%)
HIV Antibody Positive	24 (26%)
HCV Antibody Positive	54 (59%)
Depression History	19 (21%)
Income Level*	
\$0 - \$24,999	38 (42%)
\$25K - \$49,999	17 (19%)
\$50K - \$99,999	25 (27%)
\$100K or more	11 (12%)
Highest Education*	
Less than a high school diploma	8 (9%)
High school diploma /GED	25 (27%)
Completed some college and/or associates degree	25 (27%)
Bachelor's degree	23 (26%)
Graduate degree	10 (11%)
WFPTS Score* (10-50)	42.7 (10)
General Self-Efficacy Score (GSE)* (10-40)	35.0 (6)

*From data for 91 patients

IQR: Interquartile Range; HTC: Hemophilia Treatment Center; HIV: Human Immunodeficiency Virus; HCV: Hepatitis C Infection; GED: General Education Development; WFPTS: Wake Forest Physician Trust Scale

Table 2: Linear Regression of the Association of General Self-Efficacy with Clinical and Demographic Predictors (n=91)

Predictor	Simple Linear Regression*			Multivariable Linear Regression†		
	Beta	Standard Error	p-value‡	Beta	Standard Error	p-value‡
Income: >\$50,000	1.69	0.89	0.062	-9.30	6.42	0.15
Education: Completed undergrad or higher	1.74	0.91	0.059	2.38	0.94	0.013
WFPTS Score	0.10	0.067	0.14	0.0089	0.080	0.91
Age	-0.045	1.37	0.24	-0.059	0.039	0.13
Race (Non-white vs. white)	0.72	0.96	0.45	1.43	0.95	0.14
Ethnicity (Hispanic vs. non-Hispanic)	0.12	1.95	0.95	-0.65	1.91	0.73
HIV positive	-0.11	1.01	0.92	-	-	-
HCV positive	0.62	0.91	0.5	-	-	-
History of Depression	-1.29	1.087	0.24	-	-	-
Length of Time at HTC	0.037	0.041	0.37	-	-	-
Severe hemophilia	-0.46	1.038	0.66	-	-	-

*: This is the effect of each variable unadjusted on general self-efficacy (GSE)

†: Ethnicity, HIV status, HCV status, depression, length at HTC, and severity were not included in the final model by multiple linear regression (the backwards elimination method).

‡: Significant at the 0.05 level

WFPTS: Wake Forest Physician Trust Scale ; HIV: Human Immunodeficiency Virus; HCV: Hepatitis C Infection; HTC: Hemophilia Treatment Center

CONCLUSIONS

- In patients with hemophilia, education is associated with patient self-efficacy.
- Other studied variables do not appear to be associated with self-efficacy in this population.
- A limitation of the study was that the sample population was selected from patients who attended clinic which may have introduced a selection bias possibly favoring patients who are more self-efficacious.
- A better understanding of characteristics that promote self-efficacy may promote healthy behaviors in this population which will be important for optimizing the care of patients with hemophilia.

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