Perceived and Enacted Stigma and the Association with Clinical Characteristics, Work Productivity, Activity Impairment, and Indirect Costs in Adults with Vitiligo in the United States and Europe

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BACKGROUND

- Vitiligo is a highly stigmatized, chronic, depigmenting, autoimmune skin disease that can substantially affect psychosocial well-being, work productivity, and economic burden[1-3]
- These impacts often intensify when vitiligo is more visible or extensive, particularly on exposed areas, such as the face[2-4]
- Stigma is a key contributor to the overall burden of vitiligo,[2-5] yet its relationship to work and economic outcomes is not well understood

OBJECTIVE

- To describe stigma as reported by adults with vitiligo overall and by perceived severity, duration of disease, and face involvement, and to evaluate how stigma severity relates to work and economic outcomes, using the Patient Unique Stigmatization Holistic tool in Dermatology (PUSH-D)

METHODS

Study design and sample

- A cross-sectional, quantitative online survey was administered to adults (≥18 years) who previously participated in the 2024 National Health and Wellness Survey (NHWS) in the United States, United Kingdom, Germany, France, Italy, and Spain. Eligible respondents self-reported a physician diagnosis of vitiligo
- The survey captured self-reported sociodemographic characteristics, clinical history, stigma using Patient Unique Stigmatization Holistic tool in Dermatology (PUSH-D), work productivity (Work Productivity and Activity Impairment Questionnaire-Specific Health Problem version [WPAI-SHP]), and vitiligo-related indirect costs

Eligibility criteria

- ≥18 years of age
- Completed a 2023 or 2024 NHWS survey in one of the study countries
- Self-reported having ever received physician diagnosis of vitiligo
- Provided informed consent to participate in the study

Key Measures

- Stigma was measured by the PUSH-D (total score, 0–68; higher score = greater stigma)
  - The PUSH-D contains two subscales
    - "Enacted Stigma" which measures the perception of acts of discrimination against the respondent with a stigmatizing condition
    - "Felt Stigma" which measures the respondent's feelings of embarrassment and shame associated with their condition
  - Overall stigma severity was categorized based on the total PUSH-D score as: Mild [0–13] and Moderate-to-severe: [≥14]
- Work productivity and activity impairment was measured using the WPAI-SHP (0–100%; higher score = more impairment)
- Indirect costs were calculated in USD using the Human Capital Approach
- Sociodemographic and clinical characteristics were self-reported by the respondent

Statistical Analysis

- Descriptive statistics summarized sociodemographic and clinical characteristics, stigma levels (PUSH-D), work impairment, and indirect costs
- Independent-sample t-tests assessed differences in work productivity loss, activity impairment, and indirect costs between stigma severity groups (mild vs. moderate/severe)

RESULTS

- A total of 155 adults with vitiligo were included in analyses; the mean age was 58.1 ± 15.9 years, and participants had been living with vitiligo for an average of 20.8 ± 17.6 years
- Slightly more than half were female (51.0%), and over half (56.1%) held a university-level degree or higher (**Table 1**)
- Of the total sample, 122 respondents had available PUSH-D data with a mean (SD) score of 10.0 (15.1) (**Table 2**)
  - *Enacted Stigma* scores were numerically higher than *Felt Stigma* scores
  - 73.8% reporting mild stigma and 26.2% reporting moderate-to-severe stigma.
  - Duration of disease, patient global impression of severity on face (PGIS-F), patient global impression of severity on body (PGIS-V), and having any facial involvement were significantly associated with PUSH-D scores
  - Age, duration of disease and facial involvement at diagnosis all differed significantly between the mild and moderate-to-severe PUSH-D groups
- Current treatment use was also more common among those with moderate-to-severe stigma (96.6%) compared with the mild group (51.8%) (p<0.001)

Table 1. Sample characteristics

Sample Characteristics	Total (N=155)
Gender, n (%)	
Male	76 (49.0)
Female	79 (51.0)
Other	-
University education, n (%)	
Less than university degree	68 (43.9)
University degree or higher	87 (56.1)
Decline to answer	-
Annual household income, n (%)	
Below country median	53 (34.2)
Above country median	97 (62.6)
Decline to answer	5 (3.2)
Years since first vitiligo diagnosis	
Mean (SD)	20.8 (17.6)
Severity of vitiligo on face at first diagnosis, n (%)	
None	59 (38.1)
Mild	58 (37.4)
Moderate	26 (16.8)
Severe	10 (6.5)
Very severe	2 (1.3)
Severity of vitiligo on total body at first diagnosis, n (%)	
None	5 (3.2)
Mild	90 (58.1)
Moderate	46 (29.7)
Severe	14 (9.0)
Very severe	0 (0.0)

SD = standard deviation.

Associations Between Stigma and Work Impairment

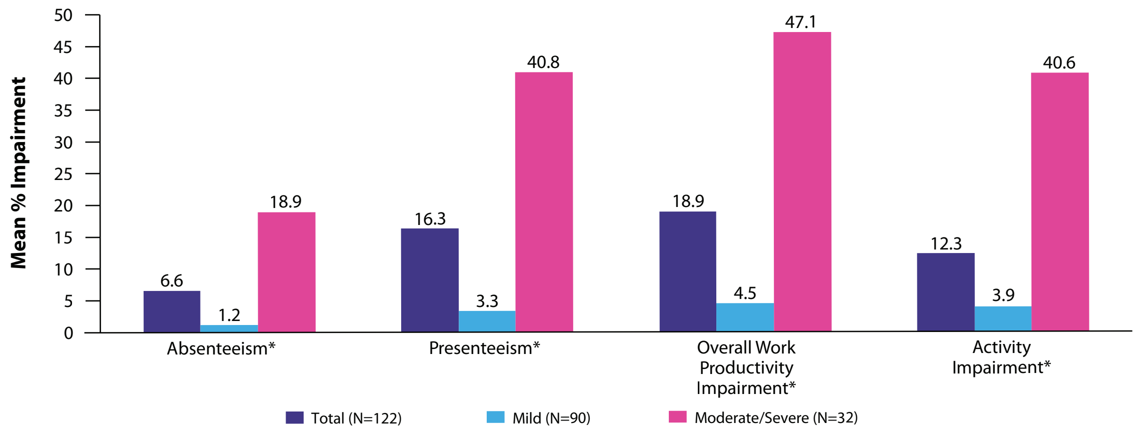
- Individuals reporting moderate-to-severe stigma experienced substantially greater functional impairments than those with mild stigma, including markedly higher work productivity loss and activity impairment (**Figure 1**)
  - Absenteeism: 18.9% vs. 1.2% (p<0.001)
  - Presenteeism: 40.8% vs. 3.3% (p<0.001)
  - Overall work productivity loss: 47.1% vs. 4.5% (p<0.001)
  - Activity impairment: 40.6% vs. 3.9% (p<0.001)

Table 2. PUSH-D Scores by Patient Characteristic

		Years since first vitiligo diagnosis			Severity on Face as of Today (PGIS-F)			Severity on Body as of Today (PGIS-V)			Face Involvement		
	Total	**≤ 5 years**	**>5 years**	**p-value**	**None to Mild**	**Moderate to Very Severe**	**p-value**	**None to Mild**	**Moderate to Very Severe**	**p-value**	**No Face Involvement**	**Face Involvement**	**p-value**
Valid N1	122	36	86		74	48		47	75		48	74	
PUSH-D total score													
Mean (SD)	9.97 (15.11)	17.39 (19.15)	6.86 (11.86)	0.004	4.74 (9.41)	18.02 (18.46)	<0.001	3.98 (8.09)	13.72 (17.19)	<0.001	5.04 (9.80)	13.16 (17.03)	0.001
Median	3.00	8.00	2.00		1.00	13.00		0.00	5.00		0.00	4.00	
Domain: Enacted Stigma (Over the last 4 weeks, because of the way others look at you, did you feel that it was better to…)													
Mean (SD)	6.26 (8.08)	10.39 (9.80)	4.53 (6.58)	0.002	3.46 (5.51)	10.58 (9.47)	<0.001	2.87 (4.74)	8.39 (9.00)	<0.001	3.71 (5.89)	7.92 (8.88)	0.002
Median	3.00	6.50	1.50		0.50	7.50		0.00	5.00		0.00	4.00	
Domain: Felt Stigma(Over the last 4 weeks, because of the way others look at you, have you felt…)													
Mean (SD)	3.70 (7.82)	7.00 (10.07)	2.33 (6.23)	0.013	1.28 (4.69)	7.44 (10.00)	<0.001	1.11 (4.21)	5.33 (9.06)	<0.001	1.33 (4.50)	5.24 (9.07)	0.002
Median	0.00	1.50	0.00		0.00	1.50		0.00	0.00		0.00	0.00	
PUSH-D severity[2] (n [%])													
Mild (0-13)	90 73.8%	20 55.6%	70 81.4%	0.006	66 89.2%	24 50.0%	<0.001	43 91.5%	47 62.7%	0.001	41 85.4%	49 66.2%	0.009
Moderate (14-23)	15 12.3%	6 16.7%	9 10.5%		6 8.1%	9 18.8%		3 6.4%	12 16.0%		6 12.5%	9 12.2%	
Severe (>=24)	17 13.9%	10 27.8%	7 8.1%		2 2.7%	15 31.3%		1 2.1%	16 21.3%		1 2.1%	16 21.6%	

SD = standard deviation.

Figure 1. Work Productivity and Activity Impairment by Stigma Severity

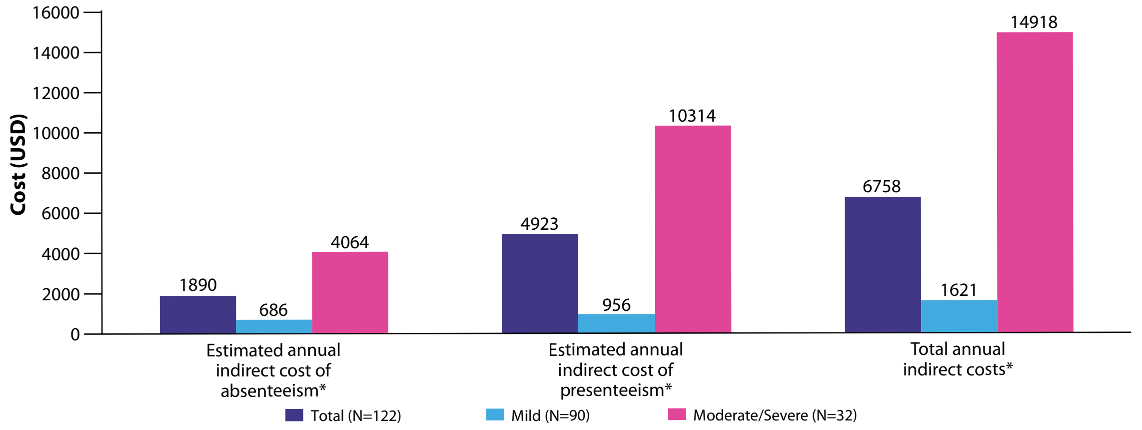


*p<0.001 across mild and moderate/severe

Indirect Economic Burden

- Economic burden closely reflected differences in stigma severity, with those experiencing moderate-to-severe stigma incurring significantly higher annual indirect costs (**Figure 2**)
  - Estimated annual indirect cost of absenteeism: $4,064 vs. $686 (p<0.001)
  - Estimated annual indirect cost of presenteeism: $10,314 vs. $956 (p<0.001)
  - Total annual indirect costs: $14,918 vs. $1,621 (p<0.001)

Figure 2. Annual Indirect Costs by Stigma Severity



*p<0.001 across mild and moderate/severe

LIMITATIONS

- Reliance on self-reported diagnoses, stigma experiences, and productivity outcomes may introduce reporting bias
- Convenience sampling may limit the generalizability of findings to the broader vitiligo population
- Analyses pooled data across countries; potential cross-country differences were not evaluated
- The cross-sectional study design prevents causal conclusions between vitiligo stigma and work or economic outcomes

CONCLUSIONS

- Vitiligo-related stigma severity was strongly associated with greater perceived facial involvement and shorter disease duration, suggesting that visible lesions and less time to adapt may contribute to heightened stigma
- Individuals experiencing moderate-to-severe stigma reported substantially higher work productivity loss, greater activity impairment, and significantly higher indirect economic burden than those with mild stigma
- Findings highlight the broad, real-world impacts of vitiligo stigma that extend beyond visible symptoms
- Results underscore the need for comprehensive care approaches that integrate psychosocial support and workplace accommodations alongside conventional clinical management to help mitigate the burden of vitiligo stigma

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DISCLOSURES

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