Understanding work-related economic burden among adults with vitiligo in the United States and Europe

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BACKGROUND

- Vitiligo can or may impose an economic burden on affected individuals and society through considerable direct and indirect costs[1]
- Moreover, people with vitiligo may face employment discrimination, such as exclusion from job opportunities, and experience reduced work productivity[2,3]
- Visibility and severity of vitiligo has been shown to influence psychosocial burden, including work productivity loss, with more visible and severe disease based on clinical assessment associated with worse outcomes[3]
- However, further research is needed to better understand how individuals' perceptions of the extent and severity of their vitiligo may impact economic outcomes

OBJECTIVE

- To estimate work productivity loss and associated indirect costs among adults with vitiligo in the United States (US) and Europe

METHODS

Study design and sample

- Individuals who completed the 2024 National Health and Wellness Survey (NHWS) were re-contacted to complete a cross-sectional online survey

Eligibility criteria

- Aged ≥18 years
- Resident of the United States (US), Germany, France, Italy, Spain, or United Kingdom (UK).
- Self-reported having ever been diagnosed with vitiligo by a physician
- Provided informed consent

Key Measures

- Demographic and clinical characteristics were self-reported by the respondents
- Monthly out of pocket (OOP) costs for treatment were measured by cost categories. Costs were reported in dollars (US), pounds (UK), or Euros (Germany, France, Italy, and Spain)
- Work Productivity and Activity Impairment Questionnaire-Specific Health Problem version (WPAI-SHP) measured absenteeism, presenteeism, overall work productivity impairment, and activity impairment. Scores can range from 0-100%; higher scores indicate greater impairment
- Annual indirect costs
  - Calculated in US dollar values using national wage rates for each country and the human capital approach
  - Absenteeism- and presenteeism-related annual indirect costs and total annual indirect costs
- Subgroups
  - Years since diagnosis (≤5 vs. >5 years).
  - Fitzpatrick skin type (FST; I-II vs. III-VI).
  - Patient-reported perception of current vitiligo severity on face (none-to-mild vs. moderate-to-very severe)
  - Patient-reported perception of current vitiligo severity on face (none-to-mild vs. moderate-to-very severe)
  - Face involvement (vs. none)
  - Percentage body surface area (BSA) with vitiligo (<4% vs. ≥4%) . BSA was measured using the Self-Assessment Vitiligo Extent Score (SA-VES)

STATISTICAL ANALYSIS

- Data from all countries were combined for analysis
- Descriptive statistics were reported on all variables for the total sample of adults with vitiligo
- Independent-sample t-tests were used to compare vitiligo subgroups on work productivity loss, activity impairment, and indirect costs

RESULTS

- Among the 155 adults with vitiligo included in analyses, mean age was 58.1±15.9 years, and 51.0% were female (**Table 1**)
- A majority (range: 58.1% to 73.5%) reported >5 years since vitiligo diagnosis, FST I-II, moderate-to-very severe vitiligo on their body, and face involvement
- Just over a third (37.4%) reported moderate-to-very severe vitiligo on their face, and 27.7% had affected BSA ≥4%

Table 1. Sample characteristics

Sample Characteristics	Total Sample (N=155)
Female, n (%)	79 (51.0)
Age (years), mean (SD)	58.1 (15.9)
Years since Dx, mean (SD)	20.8 (17.6)
>5 years since Dx, n (%)	114 (73.5)
FST I-II, n (%)*	100 (64.9)
Moderate-to-very severe vitiligo on face, n (%)	58 (37.4)
Moderate-to-very severe vitiligo on body, n (%)	91 (58.7)
Face involvement, n (%)	90 (58.1)
BSA ≥4%, n (%)	43 (27.7)

Note. BSA: body surface area; Dx: diagnosis; FST: Fitzpatrick skin type; SD: standard deviation.
*Percentage value is calculated based on N=154; one participant selected 'prefer not to answer' and could not be categorized on FST.

Economic burden of vitiligo

Monthly OOP costs

- As shown in **Table 2**, among those using treatment, OOP costs were most often incurred for non-mental health-related prescriptions (56.1%) and camouflage (46.7%)

Work productivity loss

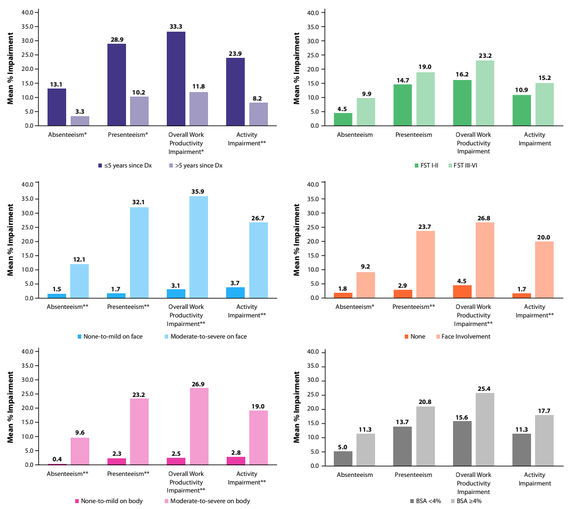
- Among the total sample, mean absenteeism, presenteeism, overall work productivity loss, and activity impairment were 6.6%, 16.3%, 18.9%, and 12.3%, respectively
- As shown in **Figure 1**, significantly higher overall work productivity impairment was reported by those with:
  - ≤5 (vs. >5) years since diagnosis (33.3% vs. 11.8%, p=0.022)
  - Moderate-to-very severe vitiligo on the face (vs. none-to-mild) (35.9% vs. 3.1%, p<0.001)
  - Moderate-to-very severe vitiligo on the body (vs. none-to-mild) (26.9% vs. 2.5%, p<0.001)
  - Face involvement (vs. none) (26.8% vs. 4.5%, p<0.001)
- For all WPAI-SHP metrics, impairment was numerically greater for those with BSA ≥4% (vs. <4%) and those with FST III-VI (vs. FST I-II), but not statistically significant

Table 2. Monthly OOP costs for treatment

Variables	Total Sample (N=107)*
OOP cost category, n (%)	
Non-mental-health-related prescriptions	60 (56.1)
Camouflage	50 (46.7)
Non-prescription therapies	26 (24.3)
Mental-health-related treatments	8 (7.5)
OOP cost, mean (SD)	
US ($)	78.5 (234.2)
UK (£)	11.7 (21.9)
Germany, France, Italy, and Spain (€)	63.4 (162.1)

Note. OOP: out of pocket; SD: standard deviation; UK: United Kingdom: US: United States.
*Only those who reported using a treatment for vitiligo were asked to report on OOP costs for treatment.

Figure 1. Work productivity loss and activity impairment by subgroup

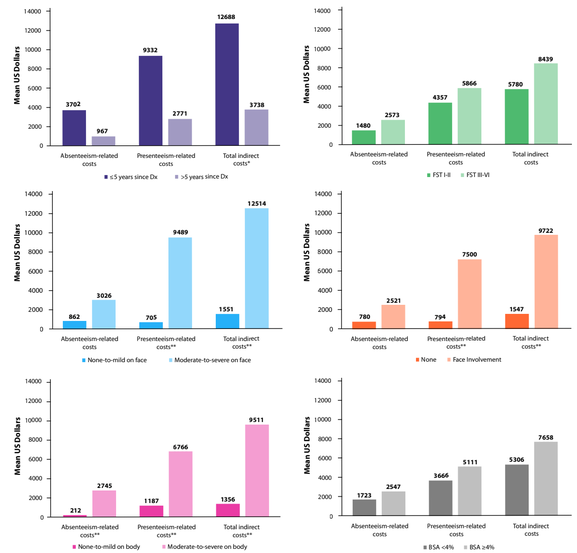


Note. BSA: body surface area; Dx: diagnosis; FST: Fitzpatrick skin type.
*p<0.05; **p<0.01 across none-to-mild and moderate-to-severe.

Annual indirect costs

- The total sample had a mean annual total indirect cost of $6,758, with a mean of $1,890 and $4,930 in absenteeism- and presenteeism-related indirect costs, respectively
- As shown in **Figure 2**, significantly higher total annual indirect costs were found among those with:
  - ≤5 (vs. >5) years since diagnosis ($12,688 vs. $3,738, p=0.037)
  - Moderate-to-very severe vitiligo on the face (vs. none-to-mild) ($12,514 vs. $1,551, p<0.001)
  - Moderate-to-very severe vitiligo on the body (vs. none-to-mild) ($9,511 vs. $1,356, p=0.002)
  - Face involvement (vs. none) ($9,722 vs. $1,547, p=0.002)
- Annual indirect costs were numerically greater for those with BSA ≥4% (vs. <4%) and those with FST III-VI (vs. FST I-II), but not statistically significant

Figure 2. Vitiligo-specific indirect costs by subgroup



Note. BSA: body surface area; Dx: diagnosis; FST: Fitzpatrick skin type.
*p<0.05; **p<0.01 across none-to-mild and moderate-to-severe.

LIMITATIONS

- As all data were self-reported, clinical characteristics could not be confirmed via medical records, and economic outcomes may have been influenced by recall error or other response biases
- Some vitiligo subpopulations may have been under- or over-represented due to the use of convenience sampling, which potentially limits the generalizability of results
- To ensure sufficient statistical power, data were combined across countries; small sample sizes precluded the ability to evaluate subgroup differences within each country
- Causality between perceived vitiligo extent and severity and economic outcomes cannot be inferred, as results were based on cross-sectional data

CONCLUSIONS

- Adults with vitiligo reported a substantial work-related economic burden
- Shorter disease duration, more severe vitiligo on face and body, and face involvement were associated with substantially more vitiligo-specific work productivity loss and indirect costs
- These results underscore the need for vitiligo management strategies aimed at reducing not only visible symptoms but also perceived severity early in the patient's journey to reduce downstream social impacts

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DISCLOSURES

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