# Prevalence of Vitiligo Among a Nationally Representative Sample of Adults in the United States

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## Background and Objective

- Vitiligo is an autoimmune disorder in which the immune system causes patchy loss of skin pigmentation [1].
- In the United States (US), prevalence estimates have varied widely and are either outdated, do not include patients with undiagnosed vitiligo, or are sampled from specific subgroups of the general population [2–7].
- Because vitiligo has profound psychosocial impacts on patients and is associated with comorbid conditions, it is important to gain a better understanding of current prevalence,

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## Methods

**Study Design**

- A cross-sectional population-based survey was conducted between December 2019 and March 2020.
- A nationally representative sample of individuals — 2017 US Census Bureau estimates for age, sex, race, Hispanic origin, income, and geographic region — was recruited from a general population research panel to complete an online survey.
- Participants were classified into the following groups based on their responses to vitiligo-screening survey questions, which were adapted from published screening tools [8], an atlas of photographs [9], and through vitiligo expert consultation (**Figure 1**).
  - Self-reported diagnosed vitiligo — prior

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## Results: Characteristics of Participants

- A total of 322,240 adults (aged 18 to 85 years) were invited to take the survey, of whom 60,524 (18.8%) responded and 19,636 (32.4%) of the respondents were not eligible due to non-completion, sampling quota already filled, age <18 or >85 years, or duplicate response.
- Among the 40,888 eligible participants representative of the US adult general population: average age was 44.9 years, 56.7% were female, 74.4% were White, 10.3% were Hispanic, and 39.8% were from the South (**Table 1**).
- 314 adults self-reported as diagnosed vitiligo and 249 self-reported as undiagnosed vitiligo (**Table 1**).
  - A greater proportion of the following was observed among self-reported vitiligo than among all participants: female (diagnosed only), non-White, Hispanic origin.
  - Average age of vitiligo onset was 27.6 years for self-reported diagnosed vitiligo and 25.0 years for self-reported undiagnosed vitiligo.
  - The distribution of Fitzpatrick skin types was similar among self-reported diagnosed and self-reported undiagnosed vitiligo, with >90% reporting skin types II–IV.

**Table 1. Characteristics of Adult Study Participants**

| Characteristic[a] | All N=40,888 | Self-reported Diagnosed Vitiligo N=314 | Self-reported Undiagnosed Vitiligo N=249 |
|---|---|---|---|
| Age, mean (standard deviation), years | 44.9 (17.39) | 42.8 (16.60) | 39.3 (15.19) |
| Female | 23,170 (56.7) | 191 (60.8) | 135 (54.2) |
| Race | | | |
| White | 30,428 (74.4) | 215 (68.5) | 149 (59.8) |
| Black or African American | 5,253 (12.8) | 49 (15.6) | 47 (18.9) |
| Asian | 1,481 (3.6) | 13 (4.1) | 10 (4.0) |
| American Indian or Alaska Native | 367 (0.9) | 4 (1.3) | 12 (4.8) |
| Native Hawaiian or other Pacific Islander | 85 (0.2) | 2 (0.6) | 0 (0.0) |
| Other | 2,086 (5.1) | 13 (4.1) | 12 (4.8) |
| Multi-race[b] | 1,188 (2.9) | 18 (5.7) | 19 (7.6) |
| Hispanic, Latino, or Spanish origin | 4,225 (10.3) | 48 (15.3) | 53 (21.3) |
| Region | | | |
| South | 16,265 (39.8) | 132 (42.0) | 106 (42.6) |
| Midwest | 9,094 (22.2) | 74 (23.6) | 53 (21.3) |
| West | 8,085 (19.8) | 67 (21.3) | 51 (20.5) |
| Northeast | 7,454 (18.2) | 41 (13.1) | 39 (15.7) |
| Age of vitiligo onset, mean (standard deviation), years | – | 27.6 (16.89) | 25.0 (15.87) |
| Fitzpatrick skin type | | | |
| I (pale white skin) | – | 10 (3.2) | 13 (5.2) |
| II (white skin) | – | 73 (23.2) | 60 (24.1) |
| III (light brown skin) | – | 123 (39.2) | 96 (38.6) |
| IV (moderate brown skin) | – | 91 (29.0) | 74 (29.7) |
| V (dark brown skin) | – | 16 (5.1) | 6 (2.4) |
| VI (deeply pigmented dark brown to black skin) | – | 1 (0.3) | 0 (0.0) |

[a] Data are n (%) unless otherwise stated.
[b] Data represent participants who selected >1 category for race.

## Results: Vitiligo Point Prevalence

- Self-reported prevalence (95% confidence intervals) was 1.38% (1.26–1.49): 0.77% (0.68–0.85%) for diagnosed and 0.61% (0.54–0.69%) for undiagnosed (**Table 2**).
  - Diagnosed non-segmental vitiligo was 0.48% (0.41–0.55%); diagnosed segmental vitiligo was 0.28% (0.23–0.33%).
- Clinician-adjudicated prevalence (sensitivity bounds) was 0.76% (0.76–1.11%): 0.46% (0.46–0.61%) for diagnosed and 0.29% (0.29–0.50%) for undiagnosed (**Table 2**).
  - Diagnosed non-segmental vitiligo was 0.37% (0.37–0.49%); diagnosed segmental vitiligo was 0.09% (0.09–0.12%).
- There was moderate agreement among the 3 expert dermatologists (Fleiss κ=0.52; P<0.0001).

**Table 2. Point Prevalence of Vitiligo (N=40,888)**

| Vitiligo Category | Non-segmental Vitiligo + Segmental Vitiligo | Non-segmental Vitiligo | Segmental Vitiligo |
|---|---|---|---|
| Self-reported, % (95% confidence intervals) | | | |
| Diagnosed | 0.77 (0.68–0.85) | 0.48 (0.41–0.55) | 0.28 (0.23–0.33) |
| Undiagnosed | 0.61 (0.54–0.69) | 0.29 (0.23–0.34) | 0.33 (0.27–0.38) |
| Diagnosed + undiagnosed | 1.38 (1.26–1.49) | 0.77 (0.68–0.85) | 0.61 (0.53–0.69) |
| Clinician-adjudicated, % (sensitivity bounds)[a] | | | |
| Diagnosed | 0.46 (0.46–0.61) | 0.37 (0.37–0.49) | 0.09 (0.09–0.12) |
| Undiagnosed | 0.29 (0.29–0.50) | 0.21 (0.20–0.36) | 0.08 (0.08–0.15) |
| Diagnosed + undiagnosed | 0.76 (0.76–1.11) | 0.58 (0.57–0.84) | 0.18 (0.18–0.27) |

[a] Lower bound estimated by classifying indeterminate cases as non-vitiligo cases and upper bound estimated by classifying indeterminate cases as vitiligo cases.

## Limitations

- While this study targeted a nationally representative sample of individuals in the US general population, there is a potential for selection bias.
  - Some potential participants may not have internet access; however, it was estimated that the percentage of households with internet access was nearly 90% in 2016 [10].
  - Participants needed to be able to read English.
  - Generalizability was further addressed by accounting for US demographic Census Bureau quotas and the use of raking methods in the analysis.
- Vitiligo status was self-reported and not confirmed by in-person clinical evaluation and therefore may be over-reported; however, clinician adjudication via a teledermatology application was conducted to confirm clinician diagnosis and ensure accuracy of diagnosis.

## Conclusions

- This study provides current US population–based prevalence estimates of all vitiligo beyond the diagnosed population and included estimates for undiagnosed, segmental, and non-segmental vitiligo.
- Self-reported prevalence (1.38%, estimated 3.4 million cases in 2020) of vitiligo among adults in the US was higher than previously reported general population estimates of 0.05% (claims-based study [7]) to ~0.50% (survey studies [2, 11]) that were limited to the diagnosed population.
- The clinician-adjudicated prevalence estimates of

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