

Epidemiology of Vitiligo in Puerto Rico: Descriptive Study from 2017-2022

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Objective: Vitiligo is a dermatological autoimmune condition characterized by areas of progressive skin depigmentation. Vitiligo lesions are cosmetically disfiguring and associated with significant psychological conditions such as depression and anxiety and comorbidities such as thyroid disease and diabetes. All races, ethnicities, ages, and regions of the world are impacted by vitiligo, with a global prevalence of about 0.5-2%. Currently, there is no published information available on the prevalence of vitiligo in Puerto Rico. Our study's aim was to estimate the prevalence of vitiligo among patients attending the specialized clinic of dermatology at UPR School of Medicine in Puerto Rico and describe the distribution of cases by age and sex.

Methods: We performed a descriptive study to evaluate the patients attending the University of Puerto Rico School of Medicine Clinics from January 2017 to May 2022. Using ICD-10 code L80 and medical records, we identified 581 patients with vitiligo and their respective demographic data distributed by sex and age.

Results: Of the 581 vitiligo patients, 350 (60.2%) were women, and 231 (39.8%) were men. The median age in the vitiligo population was 33.5 years. Out of the studied sample, 30.2% were under the age of 18. Overall, there was an estimated prevalence of 5.2%.

Conclusion: We report a vitiligo prevalence of 5.2% in a specialized clinic in Puerto Rico, suggesting further studies are necessary to discover possible underlying factors contributing to this increased prevalence.

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Key words: Vitiligo, Dermatology, Epidemiology, Puerto Rico

Vitiligo is a progressive autoimmune disease characterized by depigmentation of the skin (1). Such lesions are cosmetically disfiguring and have been associated with significant psychological distress (2). Vitiligo is also associated with other autoimmune diseases, including diabetes, which is prevalent in Puerto Rico (2,3). All races, ethnicities, and ages worldwide are impacted by vitiligo, and epidemiologic studies have demonstrated an increased prevalence in certain regions, suggesting possible environmental and genetic factors that predispose individuals towards the disease (4). The global prevalence of vitiligo has been estimated to range from 0.5% to 2%, with an overall prevalence of 0.16% in the United States (5,6,7). Furthermore, a recent study by Mastacouris et al. revealed that between 2015 and 2019, the highest age-adjusted prevalence was observed among Hispanic/Latino patients, with a prevalence of 0.29% (7). In the United States, the reported prevalence of vitiligo in children and adolescents is 1.52% and 2.16%, respectively, while in adults, it ranges between 0.76% and 1.11% (8,9). Currently, there is no published data on the epidemiology and prevalence of vitiligo in Puerto Rico. It is crucial to contribute to the existing data on the epidemiology of dermatological conditions in Puerto Rico, providing valuable insight into the study of this disease. Additionally, this data will assist in the development of effective diagnostic testing and equip clinicians with valuable information to educate their patients. Thus, our study aims to measure the prevalence of vitiligo among patients attending the specialized clinic of dermatology at UPR School of Medicine in Puerto Rico, and describe the distribution of cases by age and sex.

Methods

A descriptive study was performed in patients attending the UPR School of Medicine Clinics, the largest dermatological clinic in the Caribbean Island of Puerto Rico, from January 1st, 2017, to May 10th, 2022. IRB approval was obtained prior to the beginning of the study (protocol # B2360122). A retrospective review of medical records was performed using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) code, L80, for vitiligo, and demographic data was extracted from matching records. Study variables include the presence or absence of vitiligo, as well as age and sex of patients. Subjects were subsequently stratified based on age (childhood: 0-12 yrs, adolescent: 13-18 yrs, adult: 18+) and sex (male vs. female). The prevalence of vitiligo was calculated using the formula: prevalence equals total number of vitiligo cases over total number of patients attending clinic. Records analyzed included the total number of patients that attended the UPR Dermatology Clinic from 2017 to 2022.

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The authors have no conflicts of interest to disclose.

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Results

Prevalence of Vitiligo

Of the 11,199 patients that attended the Dermatology Clinic between January 2017 to May 2022, vitiligo was detected in 581. Therefore, we estimate that the prevalence of vitiligo in the UPR Dermatologic Clinic is approximately 5.2% (Table 1).

Table 1. Prevalence of vitiligo in Puerto Rico

	Number	Percent %
With vitiligo	581	5.2
Without vitiligo	10,618	94.8
Total	11,199	100

Sex Distribution

Of those with vitiligo, 350 (60.2%) were women and 231 (39.8%) were men (Table 2).

Table 2. Demographic characteristics of vitiligo patients

Sex	Number	Percent %
Male	231	39.8
Female	350	60.2
Total	581	100

Age (years)	Number	Percent %
Child (0-12)	112	19.3
Adolescent (13-18)	63	10.8
Adult (18+)	406	69.8
Total	581	100

Age Distribution

When subdivided by age, we found 112 patients in the child age group, 63 in the adolescent age group, and 406 in the adult age group, with a total percentage of 19.27%, 10.8%, 69.8%, respectively (Table 2). The median age in the total vitiligo population was 33.5 years, with a range from 1 to 87 years. The overall average age was 35.5 years, with a standard deviation of 21.3 years. When considering age by sex, the median age for both sexes was 34 years, and the average age was 35.5 years, with a standard deviation of 21.3 years for both male and female patients.

Discussion

Most studies on vitiligo prevalence focus on white populations, notably in the mainland United States where vitiligo has a prevalence of approximately 1% (5). There is limited data about vitiligo in Latino populations, with no published information on the prevalence in Puerto Rico.

Prevalence is estimated to be 0.5-2% worldwide; however, certain studies have demonstrated an increased prevalence in certain regions (5). For instance, a 2008 study performed in the Gujarat region of India reported an estimated prevalence of 8%, suggesting possible genetic or environmental factors that may affect disease presentation and progression (10). Furthermore, a meta-analysis conducted in 2016 reported differences in the prevalence of vitiligo by geographical locations (0.1% in Asia, 0.4% in Africa, 0.2% in America, 0.4% in Europe and 1.2% in Oceania) (11). Our study documented a vitiligo prevalence of 5.2% in a specialized clinic which suggests that the magnitude of the problem in Puerto Rico is important and warrants further research. We hypothesize that there is an increased prevalence of vitiligo in Puerto Rico that may be multifactorial in nature, including influences from genetics or the environment. For instance, Puerto Rico has a high prevalence of autoimmune conditions such as diabetes, comorbidities diagnosed alongside vitiligo (3). It is also possible that constant sun exposure leads to more noticeable lesions, thus making it more likely for patients to get diagnosed. More studies are needed to understand further potential factors affecting vitiligo prevalence in Puerto Rico.

Regarding age and sex stratification in vitiligo patients, there was a higher percentage of females (n = 350) with vitiligo compared to males (n = 231). In the literature, no differences in sex have been documented in adults; however, in children, vitiligo may affect females more than males (12). Concerning age, vitiligo can develop at any age; nonetheless, it is believed more than half of patients experience disease onset before the age of 20 years (13). Our study shows a higher number of prevalent cases in patients aged 18 years and older (n = 406). This aligns with a recent study that similarly reported nearly double the prevalence rates in adults compared to pediatric patients, potentially attributed to increased healthcare utilization among older adults (7). It is also plausible that external events, including the impact of hurricanes on the population in Puerto Rico and the COVID-19 pandemic, may have contributed to this disparity in prevalence.

While this study is based on data from the largest Dermatology Clinic in Puerto Rico, it is important to acknowledge certain limitations. We are solely considering patients who seek care at this particular clinic, potentially overlooking individuals from other regions of the island, as well as those who may not seek medical care due to various reasons, including limited access (7,14). Furthermore, the study period coincided with several extraordinary events in Puerto Rico, such as Hurricane Maria, the earthquake sequence of 2020, and the COVID-19 pandemic. These events could have had an impact on the number of patients attending dermatology clinics, possibly leading to an underestimation of the true prevalence. This, in turn, represents an additional limitation in our study. Additionally, it's worth noting that some prior studies have included the ICD-9 code 709.01 for vitiligo, which is a limitation in our analysis as we focused exclusively on the ICD-10 code, L80 (7). Nevertheless, the data provided in this study offers the most reasonable estimation of prevalence based on the population seeking care at the specialized dermatology clinic at the UPR School of Medicine in Puerto Rico.

Studies that have evaluated the prevalence of vitiligo worldwide note the limitations in quantifying their data due to a lack of publications from multiple regions. Our data contributes to the epidemiology of dermatological conditions in Puerto Rico and the study of this disease on a larger scale. Furthermore, constant sun exposure can have a psychological toll on vitiligo patients by making their lesions more noticeable. Documenting the prevalence of vitiligo in Puerto Rico helps guide efficient diagnostic testing, implementation of appropriate measures to create awareness, and promotion of psychological support groups to patients.

Resumen

Objetivo: Vitiligo es una enfermedad autoinmune cutánea caracterizada por la aparición de máculas de despigmentación progresiva. La presencia de estas lesiones conlleva un perjuicio estético para el paciente y se asocia con frecuencia a comorbilidades de la esfera psicológica y social como depresión y ansiedad, así como a otras entidades autoinmunes, incluyendo enfermedad tiroidea o diabetes, entre otros. Esta enfermedad está presente en todas las etnias, razas, edades y regiones del mundo, con una prevalencia estimada del 0.5-2%. En el momento actual, no se han publicado datos relativos a la prevalencia del vitiligo en Puerto Rico. El objetivo de este estudio es estimar la prevalencia de vitiligo en pacientes atendidos en la clínica especializada de dermatología de la Escuela de Medicina de la UPR en Puerto Rico y describir la distribución de casos por edad y sexo. **Método:** Llevamos a cabo un estudio descriptivo que incluía los pacientes atendidos en la Escuela de Ciencias Médicas de la Universidad de Puerto Rico entre enero de 2017 y mayo de 2022. Empleando la codificación L80 de ICD-10 y los datos recogidos en las historias clínicas, se incluyeron 581 pacientes con vitiligo y sus variables demográficas de edad y sexo. **Resultado:** Del total de 581 sujetos, 350 (60.2%) eran mujeres, y 231 (39.8%), varones. La edad media de la muestra fue de 33.5 años. Un 30.2% de los pacientes estudiados fueron menores de 18 años. La prevalencia estimada de vitiligo fue aproximadamente 5.2%. **Conclusión:** La prevalencia estimada de vitiligo de la población de estudio fue del 5.2%, por que se deben llevar a cabo estudios adicionales para identificar posibles factores subyacentes que puedan estar contribuyendo a estos hallazgos.

References

1. Ahmed jan N, Masood S. Vitiligo. [Updated 2022 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK559149/>
2. Agarwal S, Gupta S, Ojha A, Sinha R. Childhood vitiligo: Clinicoepidemiologic profile of 268 children from the Kumaun region of Uttarakhand, India. *Pediatr Dermatol* 2013;30(3):348-353 doi: 10.1111/pde.12032 [published Online First: 20121226].
3. Centers for Disease Control and Prevention (CDC). Increasing prevalence of diagnosed diabetes—United States and Puerto Rico, 1995-2010. *MMWR Morbidity and mortality weekly report*. 2012;61(45):918-921. <https://pubmed.ncbi.nlm.nih.gov/23151951/>
4. Silverberg N. The Epidemiology of Vitiligo. *Current Dermatology Reports* 2015;4(1):36-43.
5. Krüger C, Schallreuter KU. A review of the worldwide prevalence of vitiligo in children/adolescents and adults. *Int J Dermatol* 2012;51(10):1206-1212 doi: 10.1111/j.1365-4632.2011.05377.x [published Online First: 20120327].
6. Taylor A, Pawaskar M, Taylor SL, Balkrishnan R, Feldman SR. Prevalence of pigmentary disorders and their impact on quality of life: a prospective cohort study. *J Cosmet Dermatol*. 2008 Sep;7(3):164-8. doi: 10.1111/j.1473-2165.2008.00384.x. PMID: 18789050.
7. Mastacouris N, Strunk A, Garg A. Incidence and Prevalence of Diagnosed Vitiligo According to Race and Ethnicity, Age, and Sex in the US [published online ahead of print, 2023 Jul 19]. *JAMA Dermatol*. 2023;e232162. doi:10.1001/jamadermatol.2023.2162
8. Patel R, Pandya AG, Sikirica V, Gandhi K, Daniel SR, Anastassopoulos KP, Yamaguchi Y, Napatalung L, Baik R, Ezzedine K. Prevalence of Vitiligo among Children and Adolescents in the United States. *Dermatology*. 2023;239(2):227-234. doi: 10.1159/000528180. Epub 2023 Jan 11. PMID: 36630928; PMCID: PMC10210084.
9. Gandhi, K., Ezzedine, K., Anastassopoulos, K. P., Patel, R., Sikirica, V., Daniel, S. R., Napatalung, L., Yamaguchi, Y., Baik, R., & Pandya, A. G. (2022). Prevalence of Vitiligo Among Adults in the United States. *JAMA Dermatology*, 158(1), 43–50. <https://doi.org/10.1001/jamadermatol.2021.4724>
10. Shah H, Mehta A, Astik B. Clinical and sociodemographic study of vitiligo. *Indian J Dermatol Venereol Leprol* 2008;74(6):701 doi: 10.4103/0378-6323.45144.
11. Zhang Y, Cai Y, Shi M, et al. The Prevalence of Vitiligo: A Meta-Analysis. *PLoS One* 2016;11(9):e0163806 doi: 10.1371/journal.pone.0163806 [published Online First: 20160927].
12. Jaisankar TJ, Baruah MC, Garg BR. Vitiligo in children. *Int J Dermatol* 1992;31(9):621-623 doi: 10.1111/j.1365-4362.1992.tb03978.x.
13. Ezzedine K, Le Thuaut A, Jouary T, Ballanger F, Taieb A, Bastuji-Garin S. Latent class analysis of a series of 717 patients with vitiligo allows the identification of two clinical subtypes. *Pigment Cell Melanoma Res* 2014;27(1):134-9 doi: 10.1111/pcmr.12186 [published Online First: 20131113].
14. Barbieri JS. Strengths and Limitations of Study Designs Using Administrative Data to Assess Incidence and Prevalence of Disease [published online ahead of print, 2023 Jul 19]. *JAMA Dermatol*. 2023;10.1001/jamadermatol.2023.2161. doi:10.1001/jamadermatol.2023.2161