**Global Epidemiology of Hidradenitis Suppurativa (HS): A Systemic Review of Prevalence and Clinical Characteristics**

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| **Continent** | **Country** | **Reference** | **Study Period** | **Region** | **Case-finding method** | **Number of Cases (during the study population)** | **Prevalence per 100,000 (95% CI) year of study** | **Results** |
| **South America** |  |  |  |  |  |  |  |  |
|  | Brazil | Ianhez M., Schmitt, J.V & Miot, H.A., (2018) | January -June 2017 | 87 Brazilian municipalities | Random phone call survey | 6048 cases | prevalence of HS was 0.41% (CI 95%0.32–0.50)0.41% (CI 95% 0.32-0.50) | * HS more prevalent in adolescents and adults than children
* Slight preponderance of female sex increased with age
* Municipalities with greater Amerindian self-reported ancestry were associated with a marked lower prevalence for HS
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|  | Brazil | Andrade, T. C. P. C. de, et al., (2017) | August 2005- August 2015 | Bauru (SP) | Retrospective cross-sectional study, clinical records | 123 cases | -- | * Females 74% of cases
* Age at dx 10-67 years
* Association with DM (33%), obesity (55%), smoking (61%)
* Hurley stage II most common at diagnosis
* Onset of disease and dx – 9 years
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|  | Argentina | Zimman, S. et al., (2019) | July 2012-October 2017 | Buenos Aires | Retrospective cross-sectional study, clinical records | 66 cases | hih0.02% | * Armpits, vulva, groin areas more affected
* Male sex and perianal and gluteal locations were associated with severity
* Most commonly recorded concomitant conditions – smoking, overweight, obesity
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| **Asia** |  |  |  |  |  |  |  |  |
|  | South Korea | Lee, J.H., et al., (2018) | January 2007- December 2016 | National | Retrospective cross sectional, Korean national health insurance database | 28516 cases | Period prevalence rate 0.06% (95% CI 55.1-56.4) per 100, 000 personsStandardized prevalence rate (WHO standardization) 59.6 patients per 100, 000 personsMales: prevalence 68.3 patients (95% CI 67.3-69.3) per 100,000Females: prevalence 43.2 patients (95% CI 42.4-44.1) per 100, 000 females | * 61.3% male, 38.7% female
* Predominance of male cases, female-to-male ratio 1:1.6
* 51% aged 15-35 years
* HS association with ankylosing spondylitis was only observed in males (OR 1.542, 95% CI 1.145-2.077) and younger (<30 years) (OR 1.917, 95% CI 1.230-2.988)
* Increased risk – RA, DM type 1, UC, DM type 2, HTN, hyperlipidemia, acne conglobate, pilonidal cysts, psoriasis, pyoderma gangrenosum, alopecia aretea, vitiligo
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|  | South Korea | Yang, J. H, et al., (2018) | May 2007 to April 2017 | 13 general hospitals in South Korea | Retrospective medical chart analysis | 438 cases | -- | * 71.1% male, 28.3% female
* 23.9 (± 11.7) average age of disease onset in years
* 98.5% no family history of HS
* 47.7% of patients 10-19 years old
* most prevalent associated skin disease = Acne 12.6%
* Most prevalent associated systemic disease = 6.4% diabetes mellitus (DM)
* Hurley stages I( 64.6%), II (30.1%), III (5.3%)
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|  | Singapore | Choi, E. et al., (2018) | January 2004-December 2016 | University Dermatology Clinic, National University Hospital, Singapore | Retrospective medical chart review | 58 cases | --- | * 58.6% male patients, higher male presentation
* Most common site affected = axilla (85%), groin (43%), buttock (40%)
* 57.1% Hurley stage II at presentation
* 31% pediatric onset of HS (less than 16 years of age)
* No significant difference in disease characteristics between male and female
* Pediatric patients less likely to be overweight, obese, or smokers
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|  | Japan | Omine, T., et al., (2020) | April 2010 to March 2019 | Okinawa, Japan, University of the Ryukyus Hospital | retrospective, single‐center, case series study | 58 cases |  | * 72.4% male, male predominance, 27.6% female
* Patient age rang: 15-76 years
* Median disease duration 8.5 years
* Median sartorius score = 49, no difference in score between male and females
* The ratio of serum C‐reactive protein to albumin was significantly correlated with disease severity (rs = 0.64, P < 0.001)
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|  | Japan | Koremasa H., et al., (2020) | 2012-2014 | Nationwide, hospitals under certification of Japanese Dermatological Association | Hospital based survey | 300 cases | --- | * Male to female ratio 2.69:1
* Mean disease duration - 7.58 ± 0.56 years
* higher incidence of Hurley stages II and III, (I [23%]; II [36.3%]; III [40.3%])
* higher PGA scores in patients with axillary lesions, PGA score (mild [33.3%]; moderate, [44.3%]; severe, [11.3%]; most severe ,[9.7%])
* fewer familial cases – 4%
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|  | Taiwan | Liang, Y.-T., et al., (2021) | 2000-2013 | Nationwide, National Health Insurance Administration (NHIA), Ministry of Health and Welfare in Taiwan | Retrospective medical chart review |  | 15185.6/100,000 (95% CI 177.3-194.3) ,Annual percent change –2.96% (95% CI, −1.73 to −4.17) | * female: male ratio = 0.92 in prevalent cases , male predominance
* female-male ratio = 0.94 in incident cases
* mean annual adjusted incidence rate 11.8/100 000 (95% CI, 11.2–12.5), with annual percent change of −4.65% (95% CI, −3.32 to −5.95)
* 15- 24 years old most common age of onset
* decreasing incidence and prevalence of HS was shown during 2000–2013
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| **Australia** |  |  |  |  |  |  |  |  |
|  | Australia | Calao, M., et al., (2018) | August 2015-December 2015 | 10 Australian dermatology clinics | In person survey/interview | 88 cases | 0.67% (95% CI 0.53-0.84) | * 25.6% patients did not see clinicians regarding systems but screened for suspected HS dx
* HS patients more likely to be female, young, obese, smokers, unemployed or at home duties, lower annual personal income in comparison to not suspected of having HS
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| **Europe** |  |  |  |  |  |  |  |  |
|  | Germany | Schneider-Burrus, S., et al., (2020) | 2010-2012 | Nationwide | German nationwide statutory health insurance (SHI) | 2650 confirmed HS cases | 0.09% confirmed HS patients with or without drug therapyMen: 0.084%Women: 0.102% | * Maximum HS prevalence age range
* M (25-34 y), W (25-49 y)
* Highest prevalence of misdiagnosis in adolescence
* HS less chronic in men
* 8.09% frequency of potentially misdiagnosed patients
* 20% of patients only treated with recommended HS guidelines medication
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|  | Germany | Kirsten, N., et al., (2020) | 2014-2017 | 343 German companies | Cross-sectional whole-body examinations working people by trained dermatologist | 57 cases | Point prevalence 0.3%prevalence of 3.0% for inflammatory and non-inflammatory hidradenitis suppurativa-related lesions | * 61.4% male
* Highest prevalence of HS (0.4%) found in people with phototype IV
* Abscess most frequent dermatological finding
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|  | Denmark | Theut Riis, P., et al. (2018) | 1995-2015 | Nationwide | National Patient Register and Survey data from Danish blood donor data | 500 cases | 1.8% (CI 95% CI 1.6-2.0) | * Blood donors with HS reported characteristics similar to hospitalized HS patients 🡪 higher BMI, higher smoking status, lower SES
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|  | Turkey | Yüksel, M., & Basım, P. (2020) | June 2012-July 2017 | Istanbul, Medipol Mega University Dermatology | Retrospective medical chart review | 208 cases | -- | * 68.3% male, 31.7% female
* 56.7% Hurley stage II
* Median age of onset: male 25 years old, women 26 years old
* Most commonly involved regions = axilla (62%), groin (50.5%), and gluteus (15.9%)
* 46.6% accompanying systemic disease
* 75.6% no family history present
* Male patients had 1.67 times higher risk of the severe stage disease than women
* The patients with groin involvement, high body mass index (BMI), and low education level (0-8 years) had higher risk of severe disease stage (odds ratio=1.63, 8.91, and 1.51, respectively)
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|  | Malta | Mintoff, D., (2020) | January 1,2019 – December 31, 2019 | Nationwide | Sir Paul Boffa Hospital, SPBH, national medical chart review | 37 cases | 1.82 (95% CI 1.24-2.40) | * 72.97% male, 27.03% female
* 83.78% smokers
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|  | Ireland | Delany, E., et al., (2017) | 2015 – 6-month period | Nationwide | epidemiologic, non‐interventional, cross‐sectional (single‐visit), multicenter study | 221 cases | 1.4%; 95% CI, 1.24–1.62) | * \* based on 150 cases that gave consent for further study participation\*
* 70.0% female, 95.3% white
* Average age at dx = 31.3 years (SD = 10.1)
* Male patients were older at diagnosis compared with female patients (34.8 vs. 29.9 years; P = 0.022
* Hurley stage at dx: I (55.4%), II (32.4%), III (12.2%)
* Most common HS-PGA at dx = 40.9% mild
* 81.8% overweight or obese
* 56.0% current smoker
* 34.7% family history of HS
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|  | Sweden | Killasli H., et al., (2020) | 2001–2014 | Nationwide | A registry-based cross-sectional study | 13,538 cases | 0.14 (0.08–0.20) | * HS patients were more often women, unmarried (36 vs. 44% married), and had lower education (68 vs. 82% with an upper-secondary school degree or higher) and lower income (39 vs. 16% made SEK <100,000 a year)
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|  | France  | Canoui-Poitrine, F., et al., (2009)  | March 2005  | Nationwide  | Two case-control survey studies- one population based with self-reported data, second medical chart review  | 67 self-reported cases , 302 medical chart cases  | 1% of French population  | * strong association with current smoking in self-reported (odds ratio = 4.16, 95% confidence interval [2.99-8.69]) and in medically assessed (odds ratio = 12.55 [8.58-18.38]) populations.
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| **Middle East** |  |  |  |  |  |  |  |  |
|  | Saudi Arabia \* | Shirah, B. H., & Shirah, H. A. (2017) | January 2004 - December 2013 | Medina city, Al Madinah Al Monawarrah region | Retrospective chart review | 1369 cases | ------- | * 45.87% males, 54.12% females
* Female to male ratio = 1.18:1
* incidence rate of axillary hidradenitis suppurativa = 0.07%
* mean age was 25.5 years, range 14–37 years
* Hurley stage: I (68.73%), II (31.26%), III (0.0%)
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| **Africa** |  |  |  |  |  |  |  |  |
|  | Tunisia | Mebazaa A., et al., (2009) | January 1985 -December 2008 | La Rabta hospital, Tunis | Retrospective chart review | 1. cases
 | ------- | * marked male preponderance, sex ratio (M/F) of 10/1
* mean age of 35.2 years (range 21–53 years)
* average age of disease onset = 23.9 years
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|  | Ghana | Hagan, P. G, et al. (2020) | ---- | HolyFamily Hospital (HFH) in Berekum, Brong Ahafo, Ghana, West Africa - representative of tropical rural Ghana | exploratory, cross sectional, descriptive study, screening questionnaire | 502 cases | 0.8% (4/502), 95% CI 0.2-2.0 | * no differences in sex, age, BMI and tobacco smoking amongst HS-positive and HS-negative or between screen-positives and screen-negatives
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References

Andrade, T. C. P. C. de, Vieira, B. C., Oliveira, A. M. N., Martins, T. Y., Santiago, T. M., & Martelli, A. C. C. (2017). Hidradenitis suppurativa: epidemiological study of cases diagnosed at a dermatological reference center in the city of Bauru, in the Brazilian southeast State of São Paulo, between 2005 and 2015. *Anais Brasileiros de Dermatologia*, *92*(2), 196–199.

Calao, M., Wilson, J. L., Spelman, L., Billot, L., Rubel, D., Watts, A. D., & Jemec, G. B. E. (2018). Hidradenitis Suppurativa (HS) prevalence, demographics and management pathways in Australia: A population-based cross-sectional study. *PloS One*, *13*(7), e0200683.

Canoui-Poitrine, F., Revuz, J. E., Wolkenstein, P., Viallette, C., Gabison, G., Pouget, F., … Bastuji-Garin, S. (2009). Clinical characteristics of a series of 302 French patients with hidradenitis suppurativa, with an analysis of factors associated with disease severity. *Journal of the American Academy of Dermatology*, *61*(1), 51–57.

Choi, E., Cook, A. R., & Chandran, N. S. (2018). Hidradenitis suppurativa: An Asian perspective from a Singaporean institute. *Skin Appendage Disorders*, *4*(4), 281–285.

Delany, E., Gormley, G., Hughes, R., McCarthy, S., Kirthi, S., Markham, T., … Kirby, B. (2018). A cross-sectional epidemiological study of hidradenitis suppurativa in an Irish population (SHIP). *Journal of the European Academy of Dermatology and Venereology: JEADV*, *32*(3), 467–473.

Hagan, P. G., Andersen, R. K., ten Seldam, I. E. J., van Gelder, F., Zwijnenburg, C. M., Boer, J., & Jemec, G. B. E. (n.d.). Hidradenitis suppurativa prevalence in Berekum, Ghana – initial validation of a HS questionnaire in an African setting. Retrieved March 31, 2021, from Ehsf2020.com website: https://ehsf2020.com/wp-content/uploads/2020/02/73.pdf

Hayama, K., Fujita, H., Hashimoto, T., Terui, T., & Japanese HS Research Group. (2020). Questionnaire-based epidemiological study of hidradenitis suppurativa in Japan revealing characteristics different from those in Western countries. *The Journal of Dermatology*, *47*(7), 743–748.

Ianhez, M., Schmitt, J. V., & Miot, H. A. (2018). Prevalence of hidradenitis suppurativa in Brazil: a population survey. *International Journal of Dermatology*, *57*(5), 618–620.

Killasli, H., Sartorius, K., Emtestam, L., & Svensson, Å. (2020). Hidradenitis suppurativa in Sweden: A registry-based cross-sectional study of 13,538 patients. *Dermatology (Basel, Switzerland)*, *236*(4), 281–288.

Kirsten, N., Petersen, J., Hagenström, K., & Augustin, M. (2020). Epidemiology of hidradenitis suppurativa in Germany - an observational cohort study based on a multisource approach. *Journal of the European Academy of Dermatology and Venereology: JEADV*, *34*(1), 174–179.

Kirsten, Natalia, Zander, N., & Augustin, M. (2021). Prevalence and cutaneous comorbidities of hidradenitis suppurativa in the German working population. *Archives of Dermatological Research*, *313*(2), 95–99.

Lee, J. H., Kwon, H. S., Jung, H. M., Kim, G. M., & Bae, J. M. (2018). Prevalence and comorbidities associated with hidradenitis suppurativa in Korea: a nationwide population-based study. *Journal of the European Academy of Dermatology and Venereology: JEADV*, *32*(10), 1784–1790.

Liang, Y.-T., Yeh, C.-J., Huang, J.-Y., & Wei, J. C.-C. (2021). Epidemiology of hidradenitis suppurativa in Taiwan: A 14-year nationwide population-based study. *The Journal of Dermatology*, (1346-8138.15811). doi:10.1111/1346-8138.15811

Mebazaa, A., Ben Hadid, R., Cheikh Rouhou, R., Trojjet, S., El Euch, D., Mokni, M., … Ben Osman, A. (2009). Hidradenitis suppurativa: a disease with male predominance in Tunisia. *Acta Dermatovenerologica Alpina, Panonica, et Adriatica*, *18*(4), 165–172.

Mintoff, D., Camilleri, L., Aquilina, S., Boffa, M. J., Clark, E., & Scerri, L. (2020). Prevalence of hidradenitis suppurativa in Malta: comparison with established epidemiological data. *Clinical and Experimental Dermatology*, *45*(6), 758–759.

Omine, T., Miyagi, T., Hayashi, K., Yamaguchi, S., & Takahashi, K. (2020). Clinical characteristics of hidradenitis suppurativa patients in Okinawa, Japan: Differences between East Asia and Western countries. *The Journal of Dermatology*, *47*(8), 855–862.

Schneider-Burrus, S., Lux, G., van der Linde, K., Barbus, S., Huss-Marp, J., Tsaousi, A., … Sabat, R. (2021). Hidradenitis suppurativa - prevalence analyses of German statutory health insurance data. *Journal of the European Academy of Dermatology and Venereology: JEADV*, *35*(1), e32–e35.

Shirah, B. H., & Shirah, H. A. (2017). The clinical pattern of axillary hidradenitis suppurativa among Saudi Arabians: Mode of presentation and treatment challenges. *Journal of Cutaneous and Aesthetic Surgery*, *10*(2), 95–100.

Theut Riis, P., Pedersen, O. B., Sigsgaard, V., Erikstrup, C., Paarup, H. M., Nielsen, K. R., … Jemec, G. B. (2019). Prevalence of patients with self‐reported hidradenitis suppurativa in a cohort of Danish blood donors: a cross‐sectional study. *The British Journal of Dermatology*, *180*(4), 774–781.

Yang, J. H., Moon, J., Kye, Y. C., Kim, K. J., Kim, M. N., Ro, Y. S., … Korean Society for Acne Research. (2018). Demographic and clinical features of hidradenitis suppurativa in Korea. *The Journal of Dermatology*, *45*(12), 1389–1395.

Yüksel, M., & Basım, P. (2020). Demographic and clinical features of hidradenitis suppurativa in Turkey. *Journal of Cutaneous Medicine and Surgery*, *24*(1), 55–59.

Zimman, S., Comparatore, M. V., Vulcano, A. F., Absi, M. L., & Mazzuoccolo, L. D. (2019). Hidradenitis suppurativa: Estimated prevalence, clinical features, concomitant conditions, and diagnostic delay in a university teaching hospital in Buenos Aires, Argentina. *Actas Dermo-Sifiliograficas*, *110*(4), 297–302.