

Association of Male Androgenetic Alopecia with Psychosocial and Sexual Well-being in Early Middle-aged Men: A Northern Finland Birth Cohort 1986 Study

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Androgenetic alopecia is the most common type of hair loss in men. It is reported to have a strong effect on the quality of life, especially at a young age. However, there are only a few studies evaluating the relationship between androgenetic alopecia and psychosocial well-being in the general population. This study examined the association of androgenetic alopecia and its severity with psychosocial symptoms and sexual issues at a population level in male subjects aged between 33 and 35 years belonging to the Northern Finland Birth Cohort 1986 Study (NFBC1986) ($n = 1,027$). During 2019 to 2020, cohort subjects participated in a large follow-up study and completed diverse health questionnaires, including information on their hair status, psychosocial symptoms (the Hopkins Symptom Checklist-25 [HSCL-25] and the Generalized Anxiety Disorder Screener [GAD-7]) and sexual health. Androgenetic alopecia was reported as follows: No androgenetic alopecia $n = 468$ (45.6%), mild $n = 435$ (42.4%), moderate $n = 62$ (6.0%), and severe androgenetic alopecia $n = 62$ men (6.0%). There was no significant association of androgenetic alopecia presence or its severity with depression, anxiety, or sexual symptoms. In conclusion, contrary to previous findings, a relationship between androgenetic alopecia and psychosocial problems in early midlife was not found.

Key words: androgenetic alopecia; young adults; sexual health; psychosocial effects.

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Androgenetic alopecia (AGA) is the most common type of hair loss in men and affects a fifth of 20-year-old Caucasian men, with its prevalence steadily increasing with age (1). AGA is a progressive condition in which the sensitivity of the hair follicles to androgens leads to the thinning of hair and eventual hair loss (2). The condition is considered multifactorial, meaning its onset and progression are influenced by at least genetic and environmental factors (2). Typical areas of hair loss include the temples and scalp (3), and the phenomenon is

SIGNIFICANCE

Androgenetic alopecia is the most common type of hair loss and affects most men at some point in their adult life. Previous studies report androgenetic alopecia to be a very stressful condition linked to several psychosocial symptoms. We studied the association between androgenetic alopecia and its severity with psychosocial issues in the general population among men in their mid-thirties belonging to the Northern Finland Birth Cohort 1986 Study ($n = 1,027$). Cohort members completed questionnaires, including information on their hair status, psychosocial symptoms, and sexual health. According to our study, androgenetic alopecia has no effect on psychosocial well-being on a population level.

significantly more common among Caucasians compared with other races (4).

Although AGA has been associated with some physical conditions, such as myocardial infarction, its social and psychological effects are more prevalent (5, 6). Hair is a culturally significant part of an individual's appearance and identity, and its loss can have a strong effect on self-esteem and general quality of life (7). Psychological effects have been particularly related to younger age of onset and to severe AGA (8). In a Pakistani study ($n = 90$) on the psychological impact of AGA on men aged 20–30 years, it was demonstrated that men with hair loss exhibited significantly higher levels of anxiety and lower self-esteem compared with those without AGA (6). However, in a Finnish study, no significant connections were found between AGA and psychological well-being in middle-aged men (9).

The psychological effects of hair loss have also been discussed in many previous studies (10, 11), but their quality and reliability has varied. Often, the participants in these studies have been selected patients from dermatology clinics (10, 11), or clients of hair clinics (12), which may have resulted in selection bias. In addition, the connection of AGA with psychological well-being and quality of life has been evaluated mainly in studies where the population's age distribution has been very broad (10, 11, 13). This study aimed to analyse the prevalence and effects of AGA on psychosocial and sexual issues among men aged 33–35 years using the Northern Finland Birth Cohort 1986 Study (NFBC1986) data.

MATERIALS AND METHODS

The material of this study is based on the NFBC1986 data, which encompasses comprehensive, population-based, long-term follow-up. NFBC1986 included all 9,749 (9,432 live-born) children in the two northernmost provinces of Finland whose expected date of birth fell between 1 July 1985, and 30 June 1986 (14,15). Since birth, cohort members have been evaluated regularly by means of health questionnaires and clinical examinations. During 2019 to 2020, at the age of 33–35 years, cohort members were invited to participate in a large follow-up study. During this study, cohort members answered diverse health questionnaires regarding health and health-related factors.

Assessment of androgenetic alopecia

All study subjects self-reported the status of their hair loss from pictures representing different stages of AGA, as determined by their score on the international Norwood classification system: (0) no hair loss (Hamilton–Norwood [HN] scale I), (1) frontal baldness only (HN scale II–IIIa), (2) frontal hair loss with mild vertex baldness (HN scale III–vertex V), (3) frontal hair loss with moderate vertex baldness (HN scale VI), and (4) frontal hair loss with severe vertex baldness (HN scale VII). AGA was then classified into 4 groups according to its severity (hereafter “severity groups”): no AGA (0), mild AGA (1), moderate AGA (2–3), and severe AGA (4) (16). If the study participant had shaved his hair completely or received hair transplantation, he was advised to choose the stage describing his hair status prior to the haircut or operation.

Assessment of psychosocial well-being

The Hopkins Symptom Checklist-25 (HSCL-25) and the Generalized Anxiety Disorder Screener (GAD-7) questionnaires were used to assess mental well-being. The average scores of the participants were calculated and analysed according to AGA severity groups. HSCL-25 is a screening instrument that consists of 25 statements for measuring symptoms of depression and anxiety. The validity and usability of HSCL-25 in population studies has been comprehensively established in previous studies (17). Using the GAD-7, which specifically measures

generalized anxiety and contains 7 questions, the participants were classified into mild, moderate, or severe anxiety symptom groups based on the severity of their anxiety symptoms. The questionnaire’s reliability in screening for psychological symptoms has already been documented (18). The thresholds of the scores have been described in previous reports (9,19).

An extensive set of questionnaires, which included questions on pubertal development, sexual activity, willingness, functional problems, and sexual thoughts, was used to assess sexual well-being. In addition, lack of sexual desire and its possible effects on relationships and general satisfaction were also mapped. These data were collected using frequency-based scales.

Statistical analyses

Statistical analyses were performed at different levels. Descriptive analysis examined the prevalence of AGA, score distributions of psychosocial well-being measures, and levels of sexual activity in the entire data set and between AGA severity groups. For group comparisons, a χ^2 test was used to analyse categorical variables and a *t*-test was used to evaluate continuous variables. The data were analysed using the R software package version 4.1.0 (R Foundation for Statistical Computing, Vienna, Austria). A *p*-value <0.05 was considered statistically significant.

RESULTS

In connection with the follow-up study, health questionnaires were sent to *n*=8,896 study cases. Of these, *n*=2,831 responded to the questionnaires (31.8%); 36.3% of the respondents were men (*n*=1,027). The study found that the prevalence of AGA in men was as follows: No AGA *n*=468 (45.6%), mild AGA *n*=435 (42.4%), moderate AGA *n*=62 (6.0%), severe AGA *n*=62 (6.0%). Baseline characteristics of the study population are presented in **Table I**.

Regarding sexual well-being, daily thoughts about sex were reported with the same frequency in all AGA groups. There were no significant differences in the amount of sexual activity. Most of the subjects had sex with their partner 1–3 times a week. Lack of sexual desire was rarely reported by the subjects or by their partners,

Table I. Demographics of study population according to androgenetic alopecia (AGA) classification

Severity of AGA	No (<i>n</i> = 468)	Mild (<i>n</i> = 435)	Moderate (<i>n</i> = 62)	Severe (<i>n</i> = 62)	Total (<i>n</i> = 1,027)	<i>p</i> -value
Marital status						0.070
Single	176 (37.7%)	145 (33.4%)	14 (22.6%)	18 (29.0%)	353 (34.4%)	
In relationship	291 (62.3%)	289 (66.6%)	48 (77.4%)	44 (71.0%)	672 (65.6%)	
Education status*						0.943
Basic	52 (11.1%)	48 (11.1%)	9 (14.5%)	6 (9.8%)	115 (11.2%)	
Secondary	156 (33.4%)	165 (38.0%)	22 (35.5%)	22 (36.1%)	365 (35.6%)	
Lower tertiary	143 (30.6%)	117 (27.0%)	17 (27.4%)	19 (31.1%)	296 (28.9%)	
Upper tertiary	116 (24.8%)	104 (24.0%)	14 (22.6%)	14 (23.0%)	248 (24.2%)	

*Basic education (comprehensive schools), secondary level (upper secondary schools, vocational schools), tertiary level (universities, polytechnics).

without differences according to the severity of AGA. The severity of AGA was also unrelated to difficulty achieving orgasm (**Table II**).

Regarding mental well-being, the results of the HSCL-25 and GAD-7 questionnaires did not show significant differences between the different severity levels of AGA. In more detail, according to the HSCL-25 questionnaire, the level of depression or anxiety did not seem to be related to the severity of AGA. According to the GAD-7 questionnaire, the degree of AGA did not significantly affect the distribution of these results (**Table III**).

DISCUSSION

The results of our study show that even though AGA is common among men in midlife, its effects on psychological well-being and sexual activity on a population level are minor. Even if previous studies have shown that AGA can cause a significant psychosocial burden, especially in young men (6), this study did not find evidence of such connections.

In the present study, the results of the HSCL-25 and GAD-7 questionnaires suggest that the severity of AGA is

Table II. Association between androgenetic alopecia (AGA) and sexual issues

Severity of AGA	No (n = 468)	Mild (n = 435)	Moderate (n = 62)	Severe (n = 62)	Total (n = 1,027)	p-value
When did you experience puberty compared with your peers?						0.719
Earlier	27 (5.8%)	33 (7.6%)	5 (8.1%)	6 (9.8%)	71 (6.9%)	
At the same time	358 (76.8%)	325 (75.1%)	48 (77.4%)	44 (72.1%)	775 (75.8%)	
Later	55 (11.8%)	45 (10.4%)	4 (6.5%)	5 (8.2%)	109 (10.7%)	
I don't know	26 (5.6%)	30 (6.9%)	5 (8.1%)	6 (9.8%)	67 (6.6%)	
How often do you experience penile stiffness (erection) at night or upon waking in the morning?						0.249
1–2 or more times per week	270 (58.4%)	236 (54.6%)	33 (53.2%)	40 (64.5%)	579 (56.9%)	
Once a week	95 (20.6%)	103 (23.8%)	17 (27.4%)	6 (9.7%)	221 (21.7%)	
2–3 times per month	52 (11.3%)	54 (12.5%)	3 (4.8%)	11 (17.7%)	120 (11.8%)	
Once a month	33 (7.1%)	30 (6.9%)	7 (11.3%)	3 (4.8%)	73 (7.2%)	
Never	12 (2.6%)	9 (2.1%)	2 (3.2%)	2 (3.2%)	25 (2.5%)	
How often do you think about sex?						0.086
Daily	301 (65.4%)	256 (59.3%)	39 (63.9%)	42 (67.7%)	638 (62.9%)	
1–3 times per week	149 (32.4%)	163 (37.7%)	21 (34.4%)	19 (30.6%)	352 (34.7%)	
Once a month	8 (1.7%)	12 (2.8%)	0 (0.0%)	0 (0.0%)	20 (2.0%)	
A few times a year	1 (0.2%)	1 (0.2%)	1 (1.6%)	0 (0.0%)	3 (0.3%)	
Never	1 (0.2%)	0 (0.0%)	0 (0.0%)	1 (1.6%)	2 (0.2%)	
How often do you have sex with your partner?						0.863
Daily	12 (2.6%)	10 (2.3%)	2 (3.4%)	2 (3.3%)	26 (2.6%)	
1–3 times per week	251 (55.2%)	246 (57.5%)	29 (50.0%)	31 (51.7%)	557 (55.6%)	
Once a month	114 (25.1%)	95 (22.2%)	13 (22.4%)	19 (31.7%)	241 (24.1%)	
A few times a year	47 (10.3%)	41 (9.6%)	9 (15.5%)	4 (6.7%)	101 (10.1%)	
Never	31 (6.8%)	36 (8.4%)	5 (8.6%)	4 (6.7%)	76 (7.6%)	
How often do you masturbate?						0.863
Daily	53 (11.6%)	61 (14.3%)	6 (10.3%)	6 (9.7%)	126 (12.6%)	
1–3 times per week	264 (57.9%)	228 (53.5%)	37 (63.8%)	32 (51.6%)	561 (56.0%)	
Once a month	84 (18.4%)	85 (20.0%)	8 (13.8%)	16 (25.8%)	193 (19.3%)	
A few times a year	36 (7.9%)	36 (8.5%)	4 (6.9%)	6 (9.7%)	82 (8.2%)	
Never	19 (4.2%)	16 (3.8%)	3 (5.2%)	2 (3.2%)	40 (4.0%)	
Have you experienced a lack of sexual desire in the past year?						0.734
Daily	4 (0.9%)	6 (1.4%)	1 (1.6%)	0 (0.0%)	11 (1.1%)	
1–3 times per week	28 (6.1%)	36 (8.4%)	5 (8.1%)	3 (4.8%)	72 (7.1%)	
Once a month	63 (13.7%)	47 (10.9%)	5 (8.1%)	7 (11.3%)	122 (12.0%)	
A few times a year	147 (32.0%)	121 (28.1%)	17 (27.4%)	18 (29.0%)	303 (29.9%)	
Never	217 (47.3%)	221 (51.3%)	34 (54.8%)	34 (54.8%)	506 (49.9%)	
Has your partner experienced a lack of sexual desire in the past year?						0.928
Daily	27 (6.0%)	14 (3.3%)	2 (3.2%)	2 (3.4%)	45 (4.5%)	
1–3 times per week	63 (14.0%)	57 (13.4%)	10 (16.1%)	7 (11.9%)	137 (13.8%)	
Once a month	82 (18.2%)	82 (19.3%)	10 (16.1%)	11 (18.6%)	185 (18.6%)	
A few times a year	122 (27.1%)	112 (26.4%)	16 (25.8%)	18 (30.5%)	268 (26.9%)	
Never	156 (34.7%)	159 (37.5%)	24 (38.7%)	21 (35.6%)	360 (36.2%)	
Have you had trouble reaching orgasm in the past year?						0.653
Daily	2 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.2%)	
1–3 times per week	4 (0.9%)	5 (1.2%)	1 (1.6%)	1 (1.6%)	11 (1.1%)	
Once a month	30 (6.5%)	34 (7.9%)	1 (1.6%)	4 (6.5%)	69 (6.8%)	
A few times a year	109 (23.7%)	88 (20.5%)	17 (27.4%)	10 (16.1%)	224 (22.1%)	
Never	314 (68.4%)	303 (70.5%)	43 (69.4%)	47 (75.8%)	707 (69.8%)	
Have you had to use products to increase sexual desire in the past year?						0.688
Daily	1 (0.2%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	2 (0.2%)	
1–3 times per week	4 (1.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (0.4%)	
Once a month	3 (0.7%)	4 (1.0%)	0 (0.0%)	0 (0.0%)	7 (0.8%)	
A few times a year	4 (1.0%)	7 (1.8%)	0 (0.0%)	0 (0.0%)	11 (1.2%)	
Never	397 (97.1%)	387 (97.0%)	60 (100.0%)	55 (100.0%)	899 (97.4%)	

There are some missing data since not all study cases answered all questions.

Table III. Association between androgenetic alopecia and psychological symptoms

Severity of AGA	No (n = 468)	Mild (n = 435)	Moderate (n = 62)	Severe (n = 62)	Total (n = 1,027)	p-value
HSCL-25, depression score, mean (SD)	1.4 (0.4)	1.4 (0.4)	1.4 (0.3)	1.3 (0.3)	1.4 (0.4)	0.373
HSCL-25, depression score categories						0.706
< 1.55	367 (79.6%)	325 (76.7%)	47 (77.0%)	50 (80.6%)	789 (78.3%)	
≥ 1.55	94 (20.4%)	99 (23.3%)	14 (23.0%)	12 (19.4%)	219 (21.7%)	
HSCL-25, depression score categories						0.803
< 1.75	407 (88.3%)	373 (88.0%)	56 (91.8%)	56 (90.3%)	892 (88.5%)	
≥ 1.75	54 (11.7%)	51 (12.0%)	5 (8.2%)	6 (9.7%)	116 (11.5%)	
HSCL-25, anxiety score, mean (SD)	1.3 (0.3)	1.3 (0.3)	1.3 (0.3)	1.3 (0.2)	1.3 (0.3)	0.044
HSCL-25, anxiety score categories						0.486
< 1.55	397 (86.5%)	363 (84.4%)	50 (80.6%)	55 (88.7%)	865 (85.4%)	
≥ 1.55	62 (13.5%)	67 (15.6%)	12 (19.4%)	7 (11.3%)	148 (14.6%)	
HSCL-25, anxiety score categories						0.940
< 1.75	428 (93.2%)	397 (92.3%)	58 (93.5%)	57 (91.9%)	940 (92.8%)	
≥ 1.75	31 (6.8%)	33 (7.7%)	4 (6.5%)	5 (8.1%)	73 (7.2%)	
GAD-7 score, mean (SD)	3.8 (3.8)	3.7 (3.7)	3.9 (3.4)	3.8 (3.4)	3.8 (3.7)	0.792
GAD-7 score, categories						0.861
< 7 points	329 (83.1%)	322 (84.7%)	42 (82.4%)	45 (86.5%)	738 (84.0%)	
≥ 7 points	67 (16.9%)	58 (15.3%)	9 (17.6%)	7 (13.5%)	141 (16.0%)	
GAD-7 score, categories						0.561
< 10 points	360 (90.9%)	348 (91.6%)	49 (96.1%)	49 (94.2%)	806 (91.7%)	
≥ 10 points	36 (9.1%)	32 (8.4%)	2 (3.9%)	3 (5.8%)	73 (8.3%)	

There are some missing data as not all study cases answered all questions.

AGA: androgenetic alopecia; HSCL-25: Hopkins Symptom Checklist-25; GAD-7: Generalized Anxiety Disorder Screener.

not a significant factor in the development of depression or anxiety symptoms. Although slightly higher anxiety scores were observed in mildly balding subjects, the differences were small and not statistically significant. This result supports the findings of a previous birth cohort study in Northern Finland where AGA was not found to significantly impair psychological well-being in older men, either (9). However, a multicentre study across 13 European countries (including 20 subjects with AGA) (20) indicated contrasting findings. It reported that patients with AGA had significantly higher anxiety and depression scores compared with healthy controls. There were, however, differences when compared with our study: First, the participants were recruited from dermatology clinics, which possibly caused selection bias as these individuals were already seeking treatment for hair loss. Second, different psychological measures were used when compared with our study, namely the Hospital Anxiety and Depression Scale (HADS), which may have contributed to varying results when compared with HSCL-25 and GAD-7. Lastly, cultural factors may play a role; this multicentre study included different European populations and in some of these beauty standards and social norms may be different, which could possibly explain the difference.

Regarding sexual activity and willingness, the results were similar. Although balding men reported slightly fewer daily sexual thoughts and activity, the differences were not significant. In a previous study it was reported that men with severe AGA ($n=283$, age range 15–59 years) had a higher prevalence of sexual dysfunction (21). This difference might again be explained by the study population. Their clinical sample consisted of treatment-seeking individuals, which might cause selection bias. Our findings, however, suggest that AGA does not significantly affect sexual well-being.

The strength of this study is its wide population sample, which enables conclusions generalizable to individuals of the same age group and of Caucasian ethnicity. The standardized measures used, such as HSCL-25 and GAD-7, are a reliable way to assess psychological well-being. In addition, the questions used to assess sexual well-being give a versatile picture of the participants' experiences. More, the questions concerning sexual problems were part of the large health questionnaire. Thus, our study subjects were not asked to commit to this study because of their hair loss or sexual issues; this markedly differentiates our study from many previous studies of AGA (20). Our study's weakness is its cross-sectional design, which does not allow us to review cause-and-effect relationships. It is also possible that some of the participants may have underestimated or overestimated their own experiences in the self-assessment questionnaires. Moreover, not all invited cohort members participated in the study and the rate of non-response must be regarded as sample bias. Finally, it is shown that hair loss is a greater concern among those with body dysmorphic disorder (BDD) (22), and, in turn, BDD is associated with psychological symptoms (23). Nevertheless, the NFBC1986 study questionnaire did not include questions regarding body image.

In conclusion, this study demonstrated that AGA in younger males – regardless of its severity – does not significantly affect psychosocial or sexual health in the general population. However, at an individual level there may be people who suffer more from their AGA (22). In addition, according to the 2017 International Society of Hair Restoration Surgery Practice Census, there has been an approximate 60% increase in hair restoration procedures since 2014 in the United States (24). This suggests that cultural and social factors, such as society's beauty ideals and related pressures, might have changed at least

in the United States. Overall, attitudes among baldness vary greatly between cultures; in Asian cultures baldness can cause huge personal crisis (25), whereas in Finland baldness traditionally has not prevented men from being successful. In future studies, it could be worthwhile to focus on a longitudinal study regarding AGA to examine its effects on psychological well-being over time.

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Data referral: <http://urn.fi/urn:nbn:fi:att:f5c10eef-3d25-4bd0-beb8-f2d59df95b8e>

Data availability statement: NFBC data are available from the University of Oulu, Infrastructure for Population Studies. Permission to use the data for research purposes can be applied for via the electronic material request portal. In the use of data, we follow the EU General Data Protection Regulation (679/2016) and the Finnish Data Protection Act. The use of personal data is based on cohort participants' written informed consent at their latest follow-up study, which may cause limitations to its use. More information is available by contacting the NFBC project centre (nfbccprojectcenter (at)oulu.fi) and by visiting the cohort website.

Ethical statement: The ethics committee of the Northern Ostrobothnia Hospital District approved the present study (§108/2017), which was performed according to the principles of the 1983 Declaration of Helsinki. The subjects took part on a voluntary basis and gave their informed consent. The data were handled on a group level and were pseudonymized for analysis.

The authors have no conflicts of interest to declare.

REFERENCES

- Nyholt DR, Gillespie NA, Heath AC, Martin NG. Genetic basis of male pattern baldness. *J Invest Dermatol* 2003; 121: 1561–1564. <https://doi.org/10.1111/j.1523-1747.2003.12615.x>
- Lolli F, Pallotti F, Rossi A, Fortuna MC, Caro G, Lenzi A, et al. Androgenetic alopecia: a review. *Endocrine* 2017; 57: 9–17. <https://doi.org/10.1007/s12020-017-1280-y>
- Hamilton JB. Patterned loss of hair in man; types and incidence. *Ann N Y Acad Sci* 1951; 53: 708–728. <https://doi.org/10.1111/j.1749-6632.1951.tb31971.x>
- Ho CH, Sood T, Zito PM. Androgenetic alopecia. *StatPearls* [Internet]. 2024 Jan 7 [cited 2025 Mar 12].
- Lesko S, Rosenberg L, Shapiro S. A case-control study of baldness in relation to myocardial infarction in men. *JAMA* 1993; 269: 998–1003. <https://doi.org/10.1001/jama.1993.03500080046030>
- Danyal M, Imran S, Shah A, Sabeeh M, Hassan UL, Qureshi W. Impact of androgenetic alopecia on the psychological health of young men. 12 (1).[AQ2]
- Gupta S, Goyal I, Mahendra A. Quality of life assessment in patients with androgenetic alopecia. *Int J Trichology* 2019; 11: 147. https://doi.org/10.4103/ijt.ijt_6_19
- Han SH, Byun JW, Lee WS, Kang H, Kye YC, Kim KH, et al. Quality of life assessment in male patients with androgenetic alopecia: result of a prospective, multicenter study. *Ann Dermatol* 2012; 24: 311–318. <https://doi.org/10.5021/ad.2012.24.3.311>
- Sinikumpu SP, Jokelainen J, Auvinen J, Timonen M, Huilaja L. Association between psychosocial distress, sexual disor-

ders, self-esteem and quality of life with male androgenetic alopecia: a population-based study with men at age 46. *BMJ Open* 2021; 11: 49855. <https://doi.org/10.1136/bmjopen-2021-049855>

- Tabolli S, Sampogna F, Di C, Thomas P, Mannooranparampil J, Ribuffo M, et al. Health status, coping strategies, and alexithymia in subjects with androgenetic alopecia a questionnaire study. *Am J Clin Dermatol* 2013; 14: 139–145. <https://doi.org/10.1007/s40257-013-0010-3>
- Titeca G, Goudetsidis L, Francq B, Sampogna F, Gieler U, Tomas-Aragones L, et al. 'The psychosocial burden of alopecia areata and androgenetica': a cross-sectional multicentre study among dermatological out-patients in 13 European countries. *J Eur Acad Dermatol Venereol* 2020; 34:406–411. <https://doi.org/10.1111/jdv.15927>
- Sawant N, Chikhalkar S, Mehta V, Ravi M, Madke B, Khopkar U. Androgenetic alopecia: quality-of-life and associated lifestyle patterns. *Int J Trichology* 2010; 2: 81–85. <https://doi.org/10.4103/0974-7753.77510>
- Frith H, Jankowski GS. Psychosocial impact of androgenetic alopecia on men: a systematic review and meta-analysis. *Psychol Health Med* 2024; 29: 822–842. <https://doi.org/10.1080/13548506.2023.2242049>
- University of Oulu: Northern Finland Birth Cohort 1986. University of Oulu. Available from: <http://urn.fi/urn:nbn:fi:att:f5c10eef-3d25-4bd0-beb8-f2d59df95b8e>.
- Järvelin MR, Elliott P, Kleinschmidt I, Martuzzi M, Grundy C, Hartikainen AL, et al. Ecological and individual predictors of birthweight in a northern Finland birth cohort 1986. *Paediatr Perinat Epidemiol* 1997; 11: 298–312. <https://doi.org/10.1111/j.1365-3016.1997.tb00007.x>
- Norwood OT. Male pattern baldness: classification and incidence. *South Med J* 1975; 68: 1359–1365. <https://doi.org/10.1097/00007611-197511000-00009>
- Mattisson C, Bogren M, Horstmann V. Correspondence between clinical diagnoses of depressive and anxiety disorders and diagnostic screening via the Hopkins Symptom Check List-25 in the Lundby Study. *Nord J Psychiatry* 2013; 67: 204–213. <https://doi.org/10.3109/08039488.2012.711856>
- Spitzer RL, Kroenke K, Williams JBW, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 2006; 166: 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Sinikumpu SP, Jokelainen J, Tasanen K, Timonen M, Huilaja L. Association between pruritus and psychosocial well-being: a population-based study among 6,809 subjects. *Acta Derm Venereol* 2023; 103: adv00837. <https://doi.org/10.2340/actadv.v103.2922>
- Sampogna F, Abeni D, Gieler U, Tomas-Aragones L, Lien L, Titeca G, et al. Impairment of sexual life in 3,485 dermatological outpatients from a multicentre study in 13 European countries. *Acta Derm Venereol* 2017; 97: 478–482. <https://doi.org/10.2340/00015555-2561>
- Tas B, Kulacaoglu F, Belli H, Altuntas M. The tendency towards the development of psychosexual disorders in androgenetic alopecia according to the different stages of hair loss: a cross-sectional study. *An Bras Dermatol* 2018; 93: 185–190. <https://doi.org/10.1590/abd1806-4841.20185658>
- Dogruk Kacar S, Ozuguz P, Bagcioglu E, Coskun KS, Polat S, Karaca S, et al. Frequency of body dysmorphic disorder among patients with complaints of hair loss. *Int J Dermatol* 2016; 55: 425–429. <https://doi.org/10.1111/ijd.12758>
- Shaw AM, Arditte Hall KA, Rosenfield E, Timpano KR. Body dysmorphic disorder symptoms and risk for suicide: the role of depression. *Body Image* 2016; 19: 169–174. <https://doi.org/10.1016/j.bodyim.2016.09.007>
- Society of Hair Restoration Surgery. Practice census facts and figures. 2017. [Accessed 15 Mar 2019] Available from <http://www.ishrs.org/statistics-research.htm>
- Holca, I, Tamaş C, eds. *Forms of the Body in Contemporary Japanese Society, Literature, and Culture*. Lanham, MD: Lexington Books, 2021.