ORIGINAL REPORT

Impact of Atopic Dermatitis on Adult Women's Lives: A Survey of 1,009 French Women

Anne Claire FOUGEROUSSE[1], Marina ALEXANDRE[2], Anne Sophie DARRIGADE[3], Stéphanie MERHAND[4], Adrien MARQUIE[5], Medhi HAMZA[6], Gaelle LE FUR[7], Marie JACHIET[8], Anne Claire BURSZTEJN[9] and Charles TAIEB[10]

[1]Military Teaching Hospital Begin, Saint Mandé, [2]Avicenne Hospital, AP-HP, Bobigny, [3]Saint-André Hospital, Bordeaux, [4]French Eczema Association, Redon, [5]Statistique departement, A.M.Conseils, Paris, [6]Medical Relations, Leo Pharma, Voisin le Bretonneux, [7]Human Sciences Department, EMMA, Paris, [8]Saint-Louis Hospital, AP-HP, Paris, [9]Department of Dermatology and Allergology, University Hospital of Nancy, Vandœuvre-Nancy and [10]Patient Priority Department, European Market Maintenance Assessment, Fontenay sous Bois, France

Atopic dermatitis (AD) is one of the most common inflammatory diseases, and has a higher prevalence among females in adulthood. The aim of this observational, cross-sectional, survey-based study was to evaluate the impact of AD on the daily lives of adult women patients. A scientific committee composed exclusively of women constructed a specific questionnaire in partnership with the French Eczema Association. Severity of AD was evaluated with the Patient-Oriented Eczema Measure (POEM). A sample of 1,009 adult women (mean age ± standard deviation: 41.8 ± 14.2 years) with AD was identified from a representative sample of the French population (82% response rate 1,230 women surveyed). According to the POEM, 50.64% (*n* = 511) of subjects were identified as having mild AD, 39.35% (*n* = 397) moderate AD, and 10.01% (*n* = 101) severe AD. Overall, 67.7% (*n* = 682) reported that their eczema involved a visible area (face, neck or hands), and 19.6% (*n* = 198) a sensual area (breasts/chest, genital area or buttocks). Of the 720 women with menstrual cycles, exacerbations of AD were reported to occur mostly before (50.6%) and during (48.3%) menstruation. A small proportion of women, 7.3% (*n* = 74), reported being afraid of becoming pregnant because of their eczema. If AD involvement was in a visible area it had a greater impact on romantic relationships, sexual relationships and occupation. If AD involvement was in a sensual area it had a greater influence on romantic relationships and sexuality. Particular attention should be given to patients with localization of AD on the face, neck or hands, as they have a higher risk of social exclusion. Moreover, these results should encourage health professionals to ask patients with AD about the possible involvement of sensual areas.

Key words: atopic dermatitis; women; quality of life; sleep.

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Corr: Charles Taieb, Patient Priority Department, European Market Maintenance Assessment, Fontenay sous Bois, France. E-mail: charles.taieb@emma.clinic

SIGNIFICANCE

This study examined how the skin condition atopic dermatitis (AD) affects the daily lives of adult women. A total of 1,009 adult French women completed a questionnaire. Approximately half of the subjects had mild AD, 40% moderate AD and 10% severe AD. Many of the women had AD on visible parts of their body, such as the face, neck, or hands, and some also had AD on more private "sensual" areas, such as the breasts, genitals, or buttocks. Women with menstrual cycles reported that AD often got worse before and during their periods. Some women were concerned about getting pregnant because of their AD. When AD was on visible or sensual areas, it had a greater impact on romantic relationships, sexual relationships, and work.

Atopic dermatitis (AD) is a chronic, inflammatory and relapsing skin disease. It is one of the most common inflammatory disorders, affecting up to 20% of children worldwide (1, 2) and 10% of adults in high-income countries (3, 4), and its incidence is increasing. In France, the prevalence of AD in the general population over 15 years of age is estimated at 4.65%. AD often starts in early childhood; however, there is increasing recognition that AD often persists into or begins in adulthood (5, 6). Females and males are not equally affected by AD. While there is a higher prevalence of AD among males during infancy and childhood, there is a shift towards more females than males around puberty, and this female predominance persists into adulthood. A recent population-based study in Europe found a higher prevalence of AD among adult females than among adult males (6.6% vs 4.4%, respectively) and it has been estimated that 14.24 million adult females are affected by AD across Europe. In the project published by the European Academy of Dermatology and Venereology (EADV), 70% of patients affected by AD were under 55 years of age.

Although AD is not a life-threatening condition, it has a profound impact on quality of life (8, 9). Indeed, AD was found to have the highest global disease burden in disability-adjusted life-years of any non-malignant skin disorder (10). Pruritus, the main symptom of AD, often leads to frequent scratching, skin pain, skin infections and sleep disturbances. AD is thus associated with depression and anxiety, and decreased work productivity, which carry additional health and economic burdens for

patients. Although it has been well-documented that AD can negatively affect many aspects of patients' lives, most studies have focused mainly on children. The impact of AD on young and older adult women has been poorly investigated. Indeed, different burdens of AD arise as young women enter adulthood, including adverse effects on career paths, sexual health and romantic relationships, and different aspects of family planning, such as pregnancy and breastfeeding.

Given the long-term nature of AD and its higher prevalence among women, it is important to gain a better understanding of how the disease affects women's lives. The aim of this study was therefore to evaluate the impact of AD on the daily lives of adult women patients in the French population, including its repercussions on social, professional, and personal aspects of women's life.

METHODS

Study design

This was an observational, cross-sectional study. The study was approved by a local ethics committee (CCP Sud-Ouest et Outre-Mer III 2021-A02786-35) and was conducted according to the principles of the Declaration of Helsinki.

Study population

Survey participants were enrolled between March and May 2022, from a representative sample of French women adults recruited by a polling institute (HC Conseil Paris, France) from the general adult population above 18 years of age using stratified, proportional sampling with a replacement design. The inclusion criteria were: ability to understand French; provision of consent to participate in the study after receiving written information about the study; and age above 18 years. Data were collected via the internet by random selection of 10,000 French women from the 900,000 internet users who were more than 18 years of age and who agreed to participate in surveys. Each selected participant was contacted by e-mail. If the contact was not achieved, another potential participant with the same characteristics was randomly selected. Respondents who reported being diagnosed with AD by a physician were invited to participate in the study (n=1,230). Each participant agreed to complete a digital questionnaire (Appendix S1). A total of 1,009 women completed the questionnaire (response rate=82%).

Study procedures

The design of the questionnaire administered and its content are detailed in Appendix S1. In addition, the authors conducted interviews with dermatologists, and individuals affected by AD to gather insights into patient perceptions, concerns, and initial data for formulating the questionnaire. Using the information gathered, a list of key attributes was compiled, and, subsequently, these attributes were rephrased into clear and easily comprehensible questions.

The interviews were instrumental in achieving a broad and well-balanced recruitment of participants, ensuring diversity in terms of geographical location, age, and sociological status. Subsequently, the working group conducted a semantic analysis of the initial phrasing and streamlined the list of questions, consolidating them where similarities were evident. This process resulted in the creation of a semi-structured questionnaire comprising closed-ended questions. This comprehensive questionnaire covered various aspects, including the repercussions of AD across various phases of a woman's life, encompassing puberty, menstruation, pregnancy, menopause, sexuality, emotional well-being, intimate relationships, and professional activities (the questionnaire is available in the Appendix S1).

Patients were asked to complete the questionnaire regarding sociodemographic and personal information, including age, relationship status, professional activity, presence of atopic comorbidities, involvement of visible areas (presence of eczematous lesions over the face, neck and hands), involvement of sensual areas (presence of eczematous lesions over breasts/chest, genital area or buttocks).

Objective clinical severity of AD was assessed by the patients using the Patient-Oriented Eczema Measure (POEM) (14). POEM is a self-assessment tool used to monitor disease activity in children and adults with AD. The questionnaire asks about the frequency of occurrence of 7 symptoms during the preceding week (itching, sleep, bleeding, weeping, skin cracking, skin flaking off, and skin dryness (7 questions; range: 0–28). The previously proposed banding for POEM scores was used to create 3 groups: mild (0–7), moderate (8–16) and severe (17–28) (15).

All the questionnaires were anonymous.

Statistical methods

Qualitative variables were described by their number and percentages, and continuous variables as means, ranges and standard deviations (SD), or median and quartiles. Missing data were not taken into account in the calculations. Intergroup comparisons for categorical variables were made using the χ^2 test.

For the "fear of transmitting AD to the child" and "breastfeeding" variables, the χ^2 test was used to analyse and compare the differences between patients reporting mild vs moderate or severe AD (as defined by POEM).

Variables of the "intimate life and sexuality" section were compared according to severity of AD, presence of AD in a visible area, and presence of AD in a sensual area. Variables of the "professional activity" section were compared according to the presence of AD in a visible area.

RESULTS

Participant characteristics

A total of 1,009 adult women with AD were enrolled, with a mean age of 41.8 ± 14.2 years and a median age of 39.0 years. Their characteristics are detailed in **Table I**.

According to the POEM, 511 (50.5%) women were identified as having mild AD, 397 (39.3%) moderate AD, and 101 (10.0%) severe AD (Table I). Overall, 67.7% (n=683) reported that their eczema involved a visible area, and 19.6% (n=198) a sensual area (Table I).

Atopic dermatitis and hormonal variations

A total of 289 (28.6%) women were menopausal. Of the 719 women with menstrual cycles, 58.7% (n=422) reported change in their eczema in relation to their cycle, with exacerbations of AD mostly reported before (50.6%; n=364) and during (48.3%; n=347) menstruation (**Table II**).

Furthermore, 41% of women considered that hormonal variations affected their AD, modifying the location

Table I. Description of the study population

Variable	Women with AD (n = 1,009)
Mean age (SD), years	41.8 (14.2)
Age categories (n, %)	
18–24 years	95 (9.4)
25–34 years	289 (28.6)
35–49 years	326 (32.3)
50–64 years	215 (21.3)
≥ 65 years	84 (8.3)
Region of residence in France (n, %)	
Ile-de-France	164 (16.3)
North-West	225 (22.3)
North-East	247 (24.5)
South-West	114 (11.3)
South-East	259 (25.7)
Area of residence (n, %)	
Rural	254 (25.2)
Medium-sized town	238 (23.6)
Large city	368 (36.5)
Parisian conglomeration	149 (14.8)
Relationship status (n, %)	
Single	264 (26.2)
In a relationship	658 (65.2)
Other	87 (8.6)
Professional activity (n, %)	
Yes	669 (66.3)
No	340 (33.7)
Atopic comorbidity (n, %)	
Asthma	320 (31.7)
Food allergy	169 (16.7)
Allergic rhinoconjunctivitis	107 (10.6)
Severity of AD according to POEM (n, %)	
Mild	511 (50.6)
Moderate	397 (39.3)
Severe	101 (10.0)
AD involvement of visible area (n, %)	
Face	312 (30.9)
Neck	111 (11.0)
Right hand	294 (29.1)
Left hand	269 (26.7)
AD involvement of sensual area (n, %)	
Breasts/chest	121 (12.0)
Buttocks	97 (9.6)
Genital area	19 (1.9)

AD: atopic dermatitis; POEM: Patient-Oriented Eczema Measure.

(22.6%, n = 60), extent (60%, n = 159) and/or appearance (36.6%, n = 97).

Of the non-menopausal women, 55.8% (n = 401) reported using contraception; of these most used an oral contraceptive pill (63.3%, n = 254) or an implant (10.0%, n = 42).

Pregnancy, breastfeeding and family planning

Overall, 7.3% (n = 74) of women reported being concerned of becoming pregnant because of their eczema. Of these, 55% (n = 41/74) reported that their eczema had an impact on their desire to have a child, 42% (n = 31/74) reported that their eczema delayed or was delaying a planned pregnancy, and 91% (n = 67/74) expressed fear of passing the condition on to their child. Of the 92.7% (n = 935) women who reported not being concerned about becoming pregnant, 26% (n = 243/935) expressed fear of passing the condition on to their child.

Among the 471women who had experienced a pregnancy, 41.6% (n = 196) reported that they were afraid of transmitting their AD to their children. This proportion increased significantly with the severity of AD (mild: 36.96%; moderate or severe: 46.1%; p = 0.0452). Of these women, 42.3% reported not having breastfed their child (without significant difference according to the severity; mild: 39.01%, moderate or severe 45.58%, p = 0.1594). The vast majority of mothers (93.7%) stated that this decision was unrelated to their eczema.

Table II. Influence of menstrual cycle on atopic dermatitis (AD)

	Women with menstrual cycles and AD (n = 719) n (%)
AD exacerbations in relation to the menstrual cycle	422 (58.7)
AD exacerbations a few days before menstruation	364 (50.6)
AD exacerbations during menstruation	347 (48.3)
AD exacerbations a few days after menstruation	291 (40.5)
AD exacerbations before, during and after menstruation	232 (32.3)
Frequency of AD exacerbations	
AD exacerbations a few days before menstruation	
Always	32 (4.4)
Often	111 (15.4)
Occasionally	221 (30.7)
Rarely	160 (22.2)
Never	196 (27.2)
AD exacerbations during menstruation	
Always	31 (4.3)
Often	103 (14.3)
Occasionally	213 (29.6)
Rarely	168 (23.3)
Never	205 (28.5)
AD exacerbations a few days after menstruation	
Always	22 (3.1)
Often	80 (11.1)
Occasionally	189 (26.2)
Rarely	212 (29.4)
Never	217 (30.1)

Intimate life and sexuality

Most women reported being in a relationship (n = 658, 65.2%). Among all participating women, 21.8% reported that their eczema had interfered with their love life in the past. This proportion was higher among women with AD involvement of a visible area (31.4%) compared with women without (19.5%) (p = 0.0005). This proportion was also higher among women with AD involvement of a sensual area (24.7%) compared with women without involvement of a sensual area (12%) (p < 0.0001). On the other hand, severity (as measured by the POEM score) had no significant impact on this question (mild 19.4% vs moderate/severe 21.5%, p = 0.4321).

Of the sexually active women, 14.3% (n = 131/916) described their AD as an obstacle to their sexuality. This proportion reached 23.1% for women with AD involvement of a sensual area compared with 12.0% for those without (p = 0.0001). This negative impact on sexuality was found in 16.8% of women with AD involvement on a visible area compared with 8.9% of those without (p < 0.0001). The impact of the severity of AD was not significant (mild 13.1% vs moderate/severe 12.9%, p = 0.3003).

More broadly, 24.6% (n=200/813) of women reported that the severity of their eczema had an impact on their sexuality, again with the location of the eczema having a significant impact: 36.1% of women with AD involvement of a sensual area compared with 21.6% of those without (p=0.0001), and 27.4% of women with AD involvement of a visible area compared with 18.2% of those without (p=0.0043).

Finally, 65.6% of women concerned (n=384/585) reported talking about their eczema with their partners, of whom 13.4% considered that their eczema could be a source of contention.

Professional activity

Most women reported being engaged in a professional activity (n=669, 66.3%). Among them, 50.7% (n=339) were identified as having moderate to severe AD and 71.6% (n=479) of them reported AD involvement of at least 1 visible area.

Seventy-three women (11.4%) reported that their eczema had influenced their choice of occupation. When this was the case, the proportion of women reporting job satisfaction was significantly lower: 58.9% (n=43/73) vs 76.0% (n=431/567) (p=0.0017).

Among women with a reported professional activity, 20.9% (n=140/669) stated having encountered difficulties at work at some point during their career because of their eczema. This was the case for 24.2% (n=116) of women with AD involvement of at least 1 visible area compared with 12.6% (n=24) of women without any (p=0.0009).

A total of 210 women (31.4%) reported having taken a leave of absence from work at least once during their career to consult a physician for their AD. This proportion was higher among women with AD involvement of a visible area (34.2%, n=164) compared with women without (24.2%, n=46) (p=0.0117).

Moreover, 19.6% (n=131) reported having taken a sick leave due to their AD. This proportion was higher among women with AD involvement of a visible area (22.8%) compared with women without (11.6%) (p=0.001).

The prevalence of sick leaves was slightly lower in women with exclusive hand involvement compared with women with exclusive face involvement (15.66% vs 19.84%, respectively). Absenteeism among women with simultaneous involvement of both face and hands was highest (21.8%). No statistically significant difference was observed.

Lastly, 37.2% (n=249) of women reported thinking about their AD at work. This proportion was higher among women with AD involvement of a visible area (42.6%) compared with women without (23.7%) (p<0.0001).

DISCUSSION

These results highlight that many diverse aspects of a woman's life may be affected by AD, including sexuality, intimacy, career, and family planning.

The skin is the most visible organ of the human body and plays an important role in interpersonal communication. As the most exposed parts of the body, the face and hands both provide important non-verbal information through facial expression and hand gestures. Face perception and visual attention towards face and hands are fundamental in human social communication, and thus visible skin disorders that have a significant impact on physical appearance affect other people's attitudes and behaviours (16, 17). In this study, AD involvement of a visible area had a higher impact on romantic relationships, sexual health and occupation. Indeed, almost one-quarter of women with eczema over a visible area reported having encountered difficulties at work because of their eczema. A previous French study found that impairment of the quality of life is more pronounced in patients with eczema lesions on visible areas of the body, which emphasizes the need for specific management of AD with respect to lesions localization (18). Moreover, this seems to be particularly important in women as 1 Danish study demonstrated that visible areas of AD appear to affect women significantly more than men (19).

It is well established that AD has an impact on the opportunity for employment of adults, hinders career options and leads to absenteeism and work productivity losses (20, 21). Most surveyed women (66%) reported being engaged in an economic activity, a figure that is similar to that of women in the general population (68%) (22). Severity of AD (measured by the POEM) does not seem to have an impact on the professional activity of the surveyed women. On the other hand, the visibility of the eczema seems to be a determining factor for difficulties encountered at work, and absenteeism (leaves of absence from work to consult a physician and sick leaves due to AD).

A few studies have addressed the sexual life of patients with AD, but most of them have focused mainly on male sex (18, 23, 24). One Dutch study with a small sample size found that sexual satisfaction and self-perception of appearance in women with AD is significantly lower than in general populations. A quarter of surveyed women in the current study reported that the severity of their eczema had an impact on their sexuality, with an even greater impact when located in a sensual area (36%) or a visible area (27%). It has been previously demonstrated that patients with genital involvement report higher disease burden and lower quality of life (18). A narrative review recently summarized the impact of AD, establishes how AD, and specifically when affecting genital areas, affects quality of life and sexual health (25).

Very few studies have examined the expectations and concerns that women with AD have regarding fertility, pregnancy, and lactation (26). In the current study, 7.3% of women reported being afraid of becoming pregnant because of their eczema. This figure is similar to a recent study whereby 8% of women with psoriasis were concerned that psoriasis influenced their pregnancy plans (27). However, unlike in psoriasis, pregnancy worsens AD in 17–61% of patients, and up to 73% in women with premenstrual syndrome (26, 28, 29). A questionnaire was recently developed specifically for women with AD of childbearing age to assess their perception of family planning and it could be used in clinic along with preconception counselling (30).

Half of the surveyed women in the current study reported exacerbations of their eczema a few days before their menstrual cycle. Although it has long been recognized that female patients with AD often show worsening of their AD in relation to the menstrual cycle, the literature on the subject is scarce. In a recent study on 211 female patients with AD, 13.5% reported worsening of AD severity during menstruation/pre-menstruation (31); however, in previous studies the frequency of menstrual cycle-associated aggravation of AD skin lesions was estimated to be approximately 50–70% (28, 32). This large spread in the prevalence can be explained by the retrospective and subjective nature of the studies. A longitudinal, prospective study recently evaluated 87 women with AD during the premenstrual, menstrual, and postmenstrual periods for 3 consecutive months (33). This study found that women with moderate-to-severe AD manifested significant exacerbations in disease severity and itch as well as a deterioration in quality of life in the premenstrual compared with the menstrual period and, much more, compared with the postmenstrual period. Menstruation is very likely an AD trigger; however optimal menstrual regulation strategies for AD are ill-defined.

Limitations of this survey study include recollection bias, given the retrospective and self-reported nature of the study, a lack of validated questionnaires and the lack of a control group. Additional limitations involve the absence of inquiries regarding treatment options and sexuality. However, the strengths of this study are its large sample size of 1,009 from a representative sample of adult French women and the exploration of many diverse aspects of a women's lives.

In conclusion, these findings highlight the burden of AD on multiple aspects of women's lives. Localization on visible areas seems to have the greatest impact on romantic relationships, sexual health and work. Special attention should be given to patients with localization of AD on the face, neck and hands as they have a higher risk of social exclusion. Moreover, these results should encourage health professionals to ask patients with AD about possible involvement of sensual areas and to undergo training to facilitate open discussions with patients regarding their sexual health and expectations for family planning.

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