Sexual (dys)functioning in psoriasis patients in Flanders

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Abstract

Psoriasis, a common chronic skin condition, has far-reaching effects beyond its visible symptoms, including its influence on sexual functioning. However, research on this aspect remains limited, particularly in Belgium. This study aims to fill this gap by examining the factors contributing to sexual dysfunction in psoriasis patients in Flanders. Using a cross-sectional design, data were collected via an anonymous online survey distributed through psoriasis patient support groups and primary care practices, yielding responses from 83 participants. Results showed a notable prevalence of sexual dysfunction, with 91.6% reporting some impact of psoriasis on sexual functioning. Analysis of factors such as gender, sexual orientation, age, time since diagnosis, and lesion localization revealed nuanced insights into their influences on sexual functioning and body image. Key findings included lower body image and desire scores among women compared to men, and a significant impact of facial psoriasis lesions on sexual functioning. Additionally, heterosexual men exhibited lower sexual functioning scores compared to homosexual men. These results highlight the complexity of sexual health in psoriasis patients and underscore the need for tailored interventions. Strengths of the study include its comprehensive exploration of sexual functioning aspects and a large sample size, enabling statistically significant findings. Limitations include reliance on a tailored questionnaire, limiting direct comparisons with previous research, and potential volunteer bias. In conclusion, this study reaffirms the significant impact of psoriasis on sexual functioning and emphasizes the importance of ongoing screening and collaborative care between dermatologists and general practitioners. Future research could further elucidate patient- and disease-specific factors influencing sexual health in psoriasis patients, informing more targeted interventions to enhance patient well-being.

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Introduction

Psoriasis, a chronic skin condition, is known for more than its visible manifestations. In the shadows of this dermatological concern lies a less-explored impact – its influence on sexual functioning. As we delve into this intersection, this paper seeks to further uncover the nuanced relationship between psoriasis and intimate well-being, shedding light on an aspect often overshadowed by its external manifestations.

Psoriasis is a relatively common skin disease with a reported prevalence in Western-Europe between 1,5% and 2,5% of the adult population.(1) The age of onset varies greatly and has been reported at birth and in people of older age. Psoriasis presents as a chronic, recurrent immune mediated disease, affecting the skin and joints in variable severity. (2) In addition there is a wide range of morphology, course and distribution of skin lesions. The immune reaction involved in the pathophysiology of psoriasis lesions is a cellular one, with the main players being type 1 and type 17 T-helper cells activated by IL-12 and IL-23, interleukins secreted by antigen presenting cells.(3)

Beyond the visible manifestations on the skin, evidence demonstrates a profound connection between psoriasis and various comorbidities, encompassing both physical and psychological domains.(4,5) Even though psoriasis does not reduce the life expectancy of patients, numerous studies report a reduced quality of life in psoriasis patients, sometimes comparable to the reduction in quality of life seen in other chronic illnesses such as diabetes and ischaemic heart disease.(6,7) Furthermore studies show that two major factors causing disability in psoriasis patients are perceptions of stigmatisation (due to the visibility of the disease) and depression.(7,8)

One underexplored facet of psoriasis is its intricate relationship with sexual functioning. The close relationship between quality of life and sexual functioning and sexual activity is illustrated by the presence of questions pertaining to sexual functioning and sexual activity in many disease-specific quality of life indices.(9–11) However, the most widely used quality of life questionnaires for psoriasis patients (Psoriasis Disability Index and the Psoriasis quality of life questionnaire-12) only summarily touch upon the subject of sexual functioning and sexual activity.

In recent years many studies have been conducted to further understand the impact of chronic disease on sexual functioning and thus quality of life.(5) However, to date few studies have been directed at the impact of psoriasis on sexual functioning and no studies in Belgium have focused specifically on this topic(12,13). In this study we aim to look at sexual functioning in psoriasis patients and which patient-specific and disease-specific factors impact it. A deeper understanding of this matter could help achieve a more comprehensive care for psoriasis patients.

For this reason, we will be looking at the sexual functioning of psoriasis patients in Flanders through an anonymous online survey. Using this questionnaire, we hope to gain better understanding of epidemiological and disease-specific factors impacting sexual functioning and the presence of sexual dysfunction in psoriasis patients in Flanders.

Methods

Study design

Our research consisted of a cross-sectional observational study using an online anonymous survey.

Participants

Participants for our study were recruited through two primary channels for a duration of six months. We distributed our questionnaire through psoriasis patient support groups and the questionnaire was presented to psoriasis patients that presented for consultation in different primary care practices. The inclusion criteria for our study comprised individuals who, at any point in time, had been diagnosed with psoriasis, spoke English or Dutch, and were 18 years of age or older.

Data collection

Data were obtained using an anonymous online survey, constructed by the researchers. The questionnaire consisted of three sections, spanning a total of twenty-six questions. Participants who indicated male or female were shown a total of twenty questions. Respondents who indicated x (gender identity not in line with the previous two options) were shown all twenty-six questions and were given the choice which questions of section 3 most aligned with their own gender identity.

Section 1 aimed to gather the following epidemiological and disease-specific data of the patients: age, gender, sexuality, the presence of psoriasis lesions in the face or genital area, the time since the diagnosis of psoriasis and the primary healthcare provider responsible for monitoring the patient's psoriasis.

Age and gender were relevant data on the one hand to compare our research population to the available epidemiological data on psoriasis, on the other hand to assess the relationship between these parameters and sexual functioning. Questions pertaining to the location of the lesions were included in the questionnaire to analyse the impact of the presence or absence of lesions in these regions and sexual functioning. The last question aimed to give reference for future research as to which population of healthcare providers is most involved with these patients and their sexual health from a patient's perspective.

Section 2 of the questionnaire gathered data on body image and sexual desire (BID). Two questions (Q7 and Q8) were derived from the Body image scale. (14) Two questions (Q11-Q13) came from the Hurlbert sexual desire (HISD) questionnaire. (15) The researchers developed Q14 to evaluate the self-rated impact of psoriasis on sexual functioning.

Section 3 of the survey consists of two branching paths (depending on the answer of Q2 (either 'male' or 'female' or 'x'). Female participants will answer 6 questions from the Sexual function questionnaire (SFQ-18), male participants will answer 5 questions from the Quality of Erection Questionnaire (QEQ) and 1 question from the SFQ-18.(16,17) All questions from section 2 (BID) and section 3 (gender specific questions) will be scored on a five point ordinal scale.

See Appendix for complete list of questionnaire items.

The survey consisted of closed-ended questions regarding both nominal and ordinal variables. The nominal variables pertain to the demographic data, statistical analysis of these data consisted mostly of descriptive statistics (assessing frequency distribution, central tendency…). The ordinal data was scored using a Likert scale. The primary outcome measure of our study was the self-rated impact of psoriasis on sexual functioning. Inferential statistics was used to answer the following secondary outcome measures:

- How does the presence of facial/genital lesions impact the sexual functioning and BID in men/women/x with psoriasis?
- How does sexuality impact the sexual functioning and BID of men/women/x with psoriasis?
- How does age impact the sexual functioning and BID of men/women/x with psoriasis?
- How does the time since diagnosis impact the sexual functioning and BID of men/women/x with psoriasis?
- How does gender impact body image and desire in people with psoriasis?

These variables were also compared to the self-rated impact of psoriasis on respondents sexual functioning.

Data analysis

Data were gathered anonymously through an online questionnaire. Data were stored in a Sharepoint database of the department of family medicine and chronical care of the VUB. Only fully completed questionnaires were included.

The following types of data were gathered using the survey:

1. Ordinal data on male sexual functioning and the mean score on male sexual functioning for each male respondent. The mean was scored on a scale of 1 to 5 with 1 being unsatisfactory sexual functioning and 5 being satisfactory sexual functioning.
2. Ordinal data on female sexual functioning and the mean score on female sexual functioning for each female respondent. The mean was scored on a scale of 1 to 5 with 1 being unsatisfactory sexual functioning and 5 being satisfactory sexual functioning.
3. Ordinal data on 'body image and desire' (BID) and the mean score on BID for each respondent
4. Ordinal data on the self-rated impact of psoriasis on sexual functioning on a scale of 1 to 6 with 1 being no impact and 6 being a large impact.
5. Other Nominal data: age, gender, sexual orientation, time since diagnosis, follow-up, previous mental or sexual functioning problems (and who was contacted), facial or genital psoriasis lesions.

Demographic data were analysed using descriptive statistics, thus creating a clear view of our study population. As all other data (sections 2 and 3 of the survey, excluding the questions regarding the presence of facial or genital lesions) were scored on a Likert scale, further statistic testing was done using non-parametric tests. These ordinal data were analysed using Mood's median test, Mann-Whitney U-test, Wilcoxon matched-pairs signed-rank test, Kruskal-Wallis H-test and Spearman's rho.

Results

Participant characteristics

Data were gathered through patient support groups and through recruiting patients within our general practice office. In total eighty-three patients completed the survey and met the inclusion criteria (e.g. having psoriasis and being eighteen years or older). Patients who did not meet the criteria (being less than eighteen years old) were automatically excluded from completing the survey. Of the eighty-three participants all of them completed the survey yielding a completion rate of 100%.

The mean age of our study population was 35 years (with a median age of 33 years). 33 respondents were female (40%), 50 respondents were male (60%). There were no responders with a gender identity different from male or female. Out of all respondents 66 were heterosexual (79,5%), 9 were bisexual (10,8%), 7 were homosexual (8,4%) and 1 did not identify with any of the above mentioned sexual orientations.

Disease specific patient data

The time since the diagnosis of psoriasis for our study population is summarized in table 1. These data are in line with available epidemiological data on the age of onset of psoriasis (bimodal distribution with a peak around 30 years and a peak around 60 years) as the mean age of our population was 35 years and more than half our population had been diagnosed less than 10 years ago. (18)

Time since diagnosis	n *(%)*
Less than 1 year	12 *(14,5%)*
Between 1 and 5 years	28 *(33,7%)*
Between 6 and 10 years	15 *(18,1%)*
Between 11 and 20 years	16 *(19,3%)*
More than 20 years	12 *(14,5%)*

33 respondents reported facial psoriasis lesions (40%), 46 respondents reported psoriasis lesions in the groin or genital area (55%). 5 respondents reported both facial and genital psoriasis lesion (6%)

Most patients were primarily followed by a dermatologist for their psoriasis (85,5%). However, of the respondents that previously experienced problems with mental or sexual functioning and contacted a healthcare provider (36%), nearly half (47%) reported they would first contact their general practitioner regarding these issues.

The total score for each participant in the sections on male sexual functioning, female sexual functioning, and body image and desire (BID) was computed by averaging the scores of all individual questions within each respective section. Descriptive statistics for the total score on male sexual functioning, female sexual functioning, body image and desire and self-rated impact of psoriasis on sexual functioning are shown in figure 1. These results show a low to average score for BID (with 1 being a negative body image and low sexual desire and 5 being a positive body image and high sexual desire), a mostly satisfactory score for male sexual functioning (with 1 being very unsatisfactory and 5 being extremely satisfactory), a neither satisfactory nor unsatisfactory score for female sexual functioning (with 1 being very unsatisfactory and 5 being extremely satisfactory) and an average score

for the self-rated impact of psoriasis on sexual functioning (with 1 being no-impact and 6 being a large impact).

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
BID score	83	1,2000	4,2000	2,718072	,6742918
male sexual functioning	50	1,3333	5,0000	4,113333	,9700738
female sexual functioning	31	1,5000	4,1667	3,048925	,6597830
self-rated impact of psoriasis on sexual functioning	83	1	6	3,16	1,502

Figure 1. BID score= total score for body image and desire; male sexual functioning= total score for male sexual functioning; female sexual functioning= total score for female sexual functioning.

Inferential statistics

All inferential statistics were carried out using SPSS software. All tests were conducted using a confidence interval of 95% and a p-value < 0,05.

Gender

As the questions for male and female sexual functioning were different for each gender, head on comparison of these results was not deemed useful. The questions for BID , however, were the same for both genders, allowing analysis of the difference in scores. Analysis using Mann-Whitney U test showed a significantly lower score on BID in females as compared to males (p=0.022) (see fig. 1). However, comparison of the self-rated impact of psoriasis on sexual functioning in males and females demonstrated no significant differences.

Independent-Samples Mann-Whitney U Test Summary

Total N	83
Mann-Whitney U	1070,000
Wilcoxon W	2345,000
Test Statistic	1070,000
Standard Error	106,930
Standardized Test Statistic	2,291
Asymptotic Sig.(2-sided test)	,022

Figure 2. results of Mann-Whitney U test for BID scores of different genders

Sexual orientation

Independent-samples median test and Kruskal-Walis test showed a significantly lower median and a significantly lower overall score on male sexual functioning for heterosexual males as compared to homosexual males (p= 0,042) (see fig. 2). No significant difference could be demonstrated in median scores on sexual functioning between females with different sexual orientations. There was also no significant difference in scores for BID or self-rated impact of psoriasis on sexual functioning between different sexual orientations (for both males and females).

Pairwise Comparisons of sexual orientation and total score for sexual functioning in males

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Heterosexual-Bisexual	-,033	8,641	-,004	,997	1,000
Heterosexual-Homosexual	-15,533	6,315	-2,460	,014	,042
Bisexual-Homosexual	-15,500	10,216	-1,517	,129	,388

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 3. results of Kruskal-Walis test

Age and time since diagnosis

Comparison of the scores for male and female sexual functioning and the scores for BID between the different groups of time since diagnosis using Kruskal-Wallis Test yielded no significant results. No significant difference was observed in the scores on BID and male and female sexual functioning based on the age of participants using Spearman's rho test.

We did however see a slight negative correlation between age and the self-rated impact, showing a higher impact on sexual functioning in younger people (p=0.013) (see fig. 3). No correlation was found between the time since diagnosis and the self-rated impact.

Correlations

			Age	self-rated impact of psoriasis on sexual functioning
Spearman's rho	Age	Correlation Coefficient	1,000	-,272*
		Sig. (2-tailed)	.	,013
		N	83	83
	self-rated impact of psoriasis on sexual functioning	Correlation Coefficient	-,272*	1,000
		Sig. (2-tailed)	,013	.
		N	83	83

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 4. correlation between age and self-rated impact of psoriasis on sexual functioning

Affected areas

No significant difference was seen in the scores for male and female sexual functioning based on the presence of facial or genital psoriasis lesions in men using the Mann-Whitney U test. There was also no significant difference seen in the score on BID in men and women based on the presence of facial or genital psoriasis lesions. Analysis of the effect of facial lesions on self-rated impact of psoriasis on sexual functioning showed a significant difference in distribution between the two groups, with globally lower scores if facial lesions were present (p=0.038), but no difference in median scores. The same analysis for genital lesions showed no significant differences.

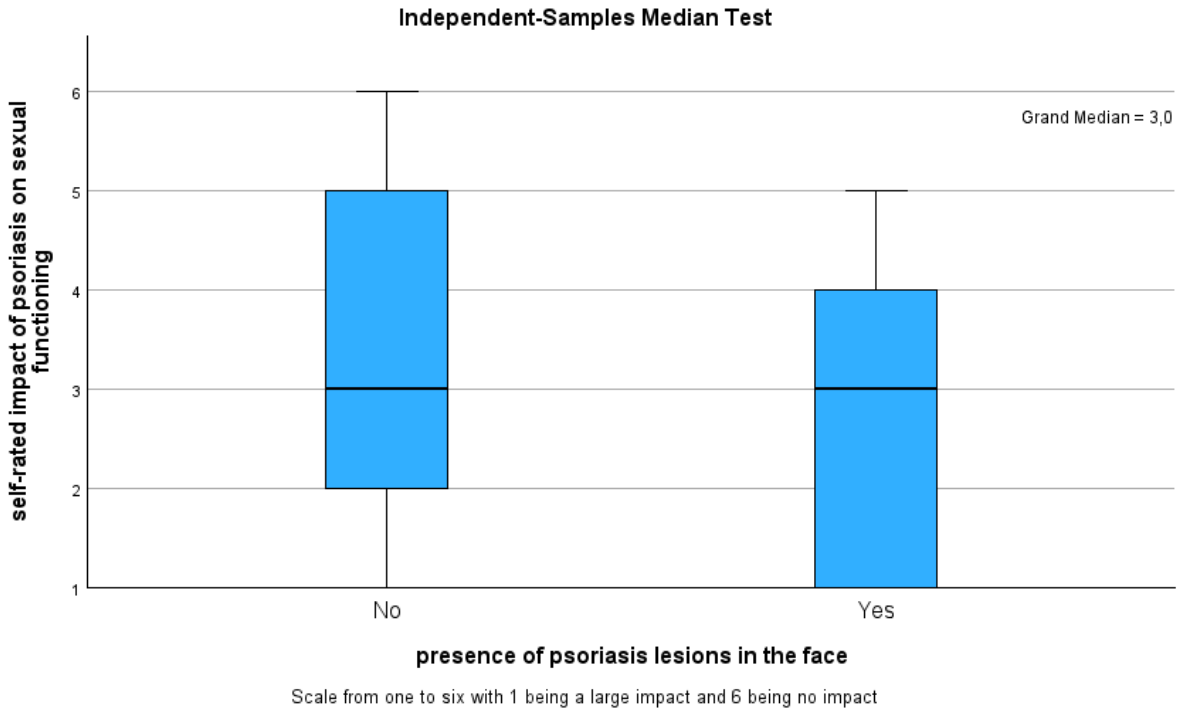


Figure 5 comparison of the median scores on self-rated impact of psoriasis on sexual functioning for individuals with and without facial psoriasis

Discussion

Psoriasis has been widely acknowledged for its profound impact on various aspects of overall health and well-being beyond its visible skin symptoms (19,20). Despite this recognition, research on the effects of psoriasis on sexual functioning remains limited. Of those studies, many focused mainly on the impact of genital psoriasis on sexual functioning in men and women (21–23). The aim of our study was to look at different patient-specific and disease-specific factors through a patient questionnaire and assess how these factors impacted sexual functioning in psoriasis patients. Additionally, we seek to ascertain whether specific patient cohorts warrant more proactive screening by general practitioners and dermatologists regarding their sexual functioning.

Data were collected using the previously mentioned methods, resulting in 83 participants meeting inclusion criteria (i.e., aged 18 years or older and diagnosed with psoriasis). Most participants (85.5%) primarily received care from dermatologists. The distribution of time since diagnosis aligned with epidemiological data, with over half diagnosed within the past 10 years. Facial lesions were reported by 40% of respondents, genital lesions by 55%, and 6% reported both. When experiencing mental or sexual issues and professional help was sought, 47% of respondents would first contact their general practitioner. The mean self-rated impact of psoriasis on sexual functioning was average (μ= 3.16, SD=1.502), with 91.6% reporting an impact.

We assessed the impact of three patient specific factors (gender, sexual orientation and age) and three disease specific factors (time since diagnosis, facial psoriasis lesions and genital psoriasis lesions) on three different outcome measures: Male and female sexual functioning, Body image and desire and Self-rated impact of psoriasis on sexual functioning. As the questions for male and female sexual functioning were gender-specific, a head on comparison of gender on these questions was not deemed appropriate by the researchers. However, we did analyse the influence of gender on the remaining outcome measures. Our findings showed significantly lower scores for body image and desire (BID) among women compared to men (p=0.022). Conversely, no discernible difference was observed in the self-rated sexual functioning between men and women. In assessing the impact of sexual orientation, our analysis revealed a noteworthy difference: heterosexual men exhibited significantly lower scores on sexual functioning compared to homosexual men (p=0.042). Nonetheless, measurements of the other outcome measures based on sexual orientation yielded no statistically significant results. Age and time since diagnosis did not significantly affect sexual functioning or BID scores. However, a slight negative correlation between age and self-reported impact on sexual functioning was observed (p=0.013). Facial lesions were associated with a globally higher self-rated impact on sexual functioning (p=0.038), but no difference in median scores. No significant differences were found based on the presence of genital lesions.

The total scores on body image and desire in our research population were between low and average, which is in line with previous research on body image in psoriasis patients. (24,25) Of the examined disease-specific and patient-specific factors, only gender had a significant impact on the scores for Body image and desire, showing a lower score in women compared to men. This finding is in line with previous research by Nazik et al. (25). The factors contributing to the diminished scores in body image and desire are multifaceted. Psoriasis, altering patients' appearance, potentially influences their attitudes toward body image(26). Existing studies (Ginsburg et al.) indicate that among psoriasis patients, the fear of being stigmatized by others due to visible lesions significantly affects their body image.(27) These findings bear significance as a negative self-image heightens the likelihood of diminished Health-Related Quality of Life (HRQoL), potentially increasing the risk for depression(24)

In our study, male participants rated their sexual functioning as satisfactory, while female participants rated theirs as neither satisfactory nor unsatisfactory. This discrepancy between male and female sexual functioning was also seen in a cross-sectional study by Nowowiejska et al.(28) Analysis of our data showed a statistically significant lower score for sexual functioning in heterosexual men as compared to homosexual men. An extensive search of current literature yielded no previous studies supporting or disproving this finding. In a cross-sectional study conducted by Mansh et al. in 2021, it was observed that psoriasis patients from sexual minorities reported inferior mental and physical well-being compared to heterosexual patients.(29) Although this study did not specifically investigate sexual functioning, it is reasonable to anticipate similar trends in our research, given that sexual functioning is inherently intertwined with both physical and mental well-being. The conflicting results from our study may be attributed to the relatively small sample sizes when comparing heterosexual to homosexual men (n=41 and n=6, respectively).

Our final outcome measure was the self-rated impact of psoriasis on sexual functioning. This outcome measure was included to serve as a subjective measure of the influence of psoriasis on sexual functioning. The prevalence of any impact of psoriasis on sexual functioning was 91,6%. This high prevalence is in line with a cross-sectional study by Nowowiejska et al. where 80% of psoriasis patients reported an occasional impact of psoriasis on their sex life.(28) The statistical analysis revealed that patients with facial psoriasis lesions reported a greater impact of psoriasis on their sexual functioning. Previous research examining the localization of psoriasis lesions and sexual dysfunction found no association with facial psoriasis (30) However, it's important to note that the sample sizes of patients with facial psoriasis in the aforementioned study were smaller compared to our research. Additionally, the outcome measure in our study, which assessed any impact on sexual functioning, was more sensitive to the subjective experience of sexual functioning and did not specifically gauge sexual dysfunction. A study on the effect of rosacea (a primarily facial skin condition) did show a higher prevalence of sexual dysfunction in women with rosacea. (31)The inverse correlation between age and self-rated impact of psoriasis on sexual functioning observed in our study population contradicts findings in existing literature, which typically show a direct relationship between age and sexual dysfunction(32,33) This discrepancy could be attributed, once again, to the fact that our outcome measure is more sensitive to the subjective experience of sexual functioning, which encompasses a broader spectrum than organic sexual dysfunction.

Strengths and limitations

As of now, there are no studies investigating the patient-specific and disease-specific factors contributing to sexual dysfunction in psoriasis patients. Furthermore, there has not been a comprehensive study that encompasses the various aspects of sexual functioning, including organic sexual functioning, body image, and desire, and explores the factors influencing these aspects. The sample size of our study was large enough to demonstrate statistically significant results, thus allowing us to formulate relevant conclusions. Most of our findings were consistent with available literature. Those findings that were in contradiction with available literature could be explained by differences in outcome measures, sample sizes and study methods.

As all our results were obtained using a questionnaire specifically developed for this study, these results could not be compared directly to the sexual functioning and body image and desire in previous studies on the topic. However, given the extensive evidence from prior research showcasing the association between psoriasis, sexual dysfunction, and diminished self-image, this limitation holds less significance for our study. Our primary aim was to concentrate on the patient- and disease specific characteristics that affect these outcomes. We expect our research to be susceptible to volunteer bias

as previous research has shown the influence of volunteer based research on the research population. (34)

Conclusions

Our study reaffirms the significant impact of psoriasis on sexual functioning, highlighting the complexity of predicting which patients will be most affected by the disease in this aspect. These findings emphasize the critical need for ongoing screening for sexual functioning and dysfunction as part of comprehensive care for psoriasis patients. Notably, while dermatologists typically oversee psoriasis management, our research underscores that many patients experiencing sexual or psychological challenges tend to approach their general practitioners first for assistance. Consequently, our findings hold relevance for both dermatologists and general practitioners, underscoring the importance of collaborative care in addressing the multifaceted impacts of psoriasis on patients' well-being. Future large-scale research could shed more light on patient and disease specific factors influencing sexual functioning in psoriasis patients. Such insights could pave the way for more tailored and effective interventions aimed at addressing the diverse needs of this patient population.

Bibliography

1. Parisi R, Iskandar IYK, Kontopantelis E, Augustin M, Griffiths CEM, Ashcroft DM. National, regional, and worldwide epidemiology of psoriasis: Systematic analysis and modelling study. The BMJ. 2020;369:1–22.

2. Langley RGB, Krueger GG, Griffiths CEM. Psoriasis: Epidemiology, clinical features, and quality of life. Ann Rheum Dis. 2005;64(SUPPL. 2):18–23.

3. Hugh JM, Weinberg JM. Update on the pathophysiology of psoriasis. Cutis. 2018;102(5):6–12.

4. Mukhtar R, Choi J, Koo JYM. Quality-of-life issues in psoriasis. Dermatol Clin. 2004;22(4):389–95.

5. Duarte G, Calmon H, Radel G, Oliveira M de FP de. Psoriasis and sexual dysfunction: links, risks, and management challenges. Psoriasis: Targets and Therapy. 2018;Volume 8:93–9.

6. Krueger GG, Feldman SR, Camisa C, Duvic M, Elder JT, Gottlieb AB, et al. Two considerations for patients with psoriasis and their clinicians: What defines mild, moderate, and severe psoriasis? What constitutes a clinically significant improvement when treating psoriasis? J Am Acad Dermatol. 2000;43(2 I):281–5.

7. Langley RGB, Krueger GG, Griffiths CEM. Psoriasis: Epidemiology, clinical features, and quality of life. Ann Rheum Dis. 2005;64(SUPPL. 2):18–23.

8. Richards HL, Fortune DG, Griffiths CEM, Main CJ. The contribution of perceptions of stigmatisation to disability in patients with psoriasis. J Psychosom Res. 2001;50(1):11–5.

9. FINLAY AY, KHAN GK. Dermatology Life Quality Index (DLQI)—a simple practical measure for routine clinical use. Clin Exp Dermatol. 1994;19(3):210–6.

10. Mukhtar R, Choi J, Koo JYM. Quality-of-life issues in psoriasis. Dermatol Clin. 2004;22(4):389–95.

11. Guyatt G, Mitchell A, Irvine EJ, Singer J, Williams N, Goodacre R, et al. A New Measure of Health Status for Clinical Trials in Inflammatory Bowel Disease. Gastroenterology. 1989;96(2):804–10.

12. TÜREL ERMERTCAN A, TEMELTAŞ G, DEVECI A, DINÇ G, GÜLER HB, ÖZTÜRKCAN S. Sexual dysfunction in patients with psoriasis. J Dermatol [Internet]. 2006;33(11):772–8. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1346-8138.2006.00179.x

13. Kędra K, Janeczko K, Michalik I, Reich A. Sexual Dysfunction in Women and Men with Psoriasis: A Cross-Sectional Questionnaire-Based Study. Medicina (Kaunas). 2022 Oct;58(10).

14. Hopwood P, Fletcher I, Lee A, Al Ghazal S. A body image scale for use with cancer patients. Eur J Cancer. 2001;37(2):189–97.

15. Apt C V, Hurlbert DF. Motherhood and Female Sexuality Beyond One Year Postpartum: A Study of Military Wives. J Sex Educ Ther. 1992;18(2):104–14.

16. Quirk FH, Heiman JR, Rosen RC, Laan E, Smith MD, Boolell M. Development of a sexual function questionnaire for clinical trials of female sexual dysfunction. J Womens Health Gend Based Med. 2002 Apr;11(3):277–89.

17. Porst H, Gilbert C, Collins S, Huang X, Symonds T, Stecher V, et al. Development and validation of the quality of erection questionnaire. J Sex Med. 2007 Mar;4(2):372–81.

18. Parisi R, Iskandar IYK, Kontopantelis E, Augustin M, Griffiths CEM, Ashcroft DM. National, regional, and worldwide epidemiology of psoriasis: Systematic analysis and modelling study. The BMJ. 2020;369:1–22.

19. Marta Wojciechowska-Zdrojowy Adam Reich JCS, Wojciechowski A. Analysis of Sexual Problems in Men With Psoriasis. J Sex Marital Ther [Internet]. 2018;44(8):737–45. Available from: https://doi.org/10.1080/0092623X.2018.1462276

20. Hrehorów E, Salomon J, Matusiak L, Reich A, Szepietowski JC. Patients with psoriasis feel stigmatized. Acta Derm Venereol. 2012;92(1).

21. Rivera S, Flood A, Dykstra C, Herbenick D, DeMaria AL. Genital Self-Image, Sexual Function, and Quality of Life Among Individuals with Vulvar and Non-Vulvar Inflammatory Dermatoses. Arch Sex Behav. 2022 Nov;51(8):3965–79.

22. Yi OS, Huan KY, Har LC, Ali NM, Chiang TW. Genital Psoriasis: A Prospective, Observational, Single-Centre Study on Prevalence, Clinical Features, Risk Factors, and Its Impact on Quality of Life and Sexual Health. Indian J Dermatol. 2022;67(2):205.

23. da Silva N, Augustin M, Langenbruch A, Mrowietz U, Reich K, Thaçi D, et al. Sex-related impairment and patient needs/benefits in anogenital psoriasis: Difficult-to-communicate topics and their impact on patient-centred care. PLoS One. 2020;15(7):e0235091–e0235091.

24. Zachariae R, Zachariae H, Blomqvist K, Davidsson S, Molin L, MØrk C, et al. Quality of life in 6497 Nordic patients with psoriasis. British Journal of Dermatology [Internet]. 2002 Jun 1;146(6):1006–16. Available from: https://doi.org/10.1046/j.1365-2133.2002.04742.x

25. NAZİK H, Nazik S, Gül F. Body Image, Self-esteem, and Quality of Life in Patients with Psoriasis. Indian Dermatol Online J. 2017 Apr;8:310.

26. Aerts L, Danielsen P, Skiveren J. Body Image altered by psoriasis. A study based on individual interviews and a model for Body Image. J Dermatolog Treat. 2012 Oct 15;25.

27. GINSBURG IH, LINK BG. PSYCHOSOCIAL CONSEQUENCES OF REJECTION AND STIGMA FEELINGS IN PSORIASIS PATIENTS. Int J Dermatol [Internet]. 1993 Aug 1;32(8):587–91. Available from: https://doi.org/10.1111/j.1365-4362.1993.tb05031.x

28. Nowowiejska J, Karny A, Nesterowicz M, Purpurowicz P, Baran A, Kaminski TW, et al. Sexual dysfunctions in psoriatic patients. Front Public Health [Internet]. 2024 Apr 17;12. Available from: https://www.frontiersin.org/articles/10.3389/fpubh.2024.1339196/full

29. 'Mansh M 'Mulick, A "Langan, SM." The impact of psoriasis and sexual orientation on mental and physical health among adults in the United States. J Am Acad Dermatol. 2021 Jul;87(1):234–7.

30. Molina-Leyva A, Almodovar-Real A, Ruiz-Carrascosa JC, Naranjo-Sintes R, Serrano-Ortega S, Jimenez-Moleon JJ. Distribution Pattern of Psoriasis Affects Sexual Function in Moderate to Severe Psoriasis: A Prospective Case Series Study. J Sex Med [Internet]. 2014;11(12):2882–9. Available from: https://www.sciencedirect.com/science/article/pii/S1743609515306287

31. Aktaş Karabay E, Karşıyakalı N, Karabay E. Evaluation of sexual functions in female rosacea patients: a prospective, case-control study. Int J Impot Res [Internet]. 2020;32(6):628–34. Available from: https://doi.org/10.1038/s41443-020-0275-z

32. Corona G, Rastrelli G, Maseroli E, Forti G, Maggi M. Sexual function of the ageing male. Best Pract Res Clin Endocrinol Metab [Internet]. 2013;27(4):581–601. Available from: https://www.sciencedirect.com/science/article/pii/S1521690X13000687

33. Hayes R, Dennerstein L. The Impact of Aging on Sexual Function and Sexual Dysfunction in Women: A Review of Population-Based Studies. J Sex Med [Internet]. 2005 May 1;2(3):317–30. Available from: https://doi.org/10.1111/j.1743-6109.2005.20356.x

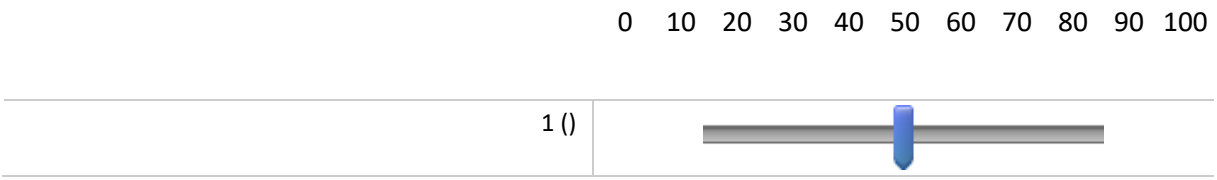
34. Bogaert AF. Volunteer bias in human sexuality research: Evidence for both sexuality and personality differences in males. Arch Sex Behav. 1996;25(2):125–40.

Appendix

Questionnaire, English version:

Sexual functioning in psoriasis patients

Q1 Age



Q2 Sex

- Male (1)
- Female (2)
- x (3)

Q3 What is your sexual orientation?

- Heterosexual (1)
- Homosexual (2)
- Bisexual (3)
- None of the above (4)

Q4 How long ago were you diagnosed with psoriasis?

- Less than 1 year ago (1)
- Between 1 and 5 years ago (2)
- Between 6 and 10 years ago (3)
- Between 11 and 20 years ago (4)
- More than 21 years ago (5)

Q5 With whom does the follow-up in context of your psoriasis mainly take place?

- Dermatologist (1)
- General practitioner (2)

Q6 Have you had problems with your mental or sexual functioning in the past? If so, which health care provider did you contact?

- [ ] General practitioner (1)
- [ ] Dermatologist (2)
- [ ] Other health care provider (psychologist, sexuologist,...) (3)
- [ ] Other (family, friends,...) (4)
- [ ] Not applicable (5)

Q7 Does your appearance affect your identity or person?

- ○ Always (1)
- ○ Aften (2)
- ○ Sometimes (3)
- ○ Rarely (4)
- ○ Never (5)

Q8 Have you felt less physically attractive as a result of your illness or its treatment?

- ○ Always (1)
- ○ Often (2)
- ○ Sometimes (3)
- ○ Rarely (4)
- ○ Never (5)

Q9 Do you have psoriasis lesions on the face?

- ○ Yes (1)
- ○ No (2)

Q10 Do you have psoriasis lesions in the groin or genital region?

- ○ Yes (1)

○ No (2)

Q11 How often have you felt stress about your sex life?

○ Always (1)

○ Often (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q12 It's easy for me to get in the mood for sex.

○ Always (1)

○ Often (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q13 My desire for sex should be stronger

○ Always (1)

○ Often (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q14 How do you rate the impact that psoriasis has on your sexual activities?

○ Non-existent (1)

○ Very small (2)

○ Small (3)

○ Average (4)

- ○ Large (5)
- ○ Very Largy (6)

Q15 You had erections hard enough for penetration of your partner?

- ○ Almost always or always (1)
- ○ More than half the time (2)
- ○ About half the time (3)
- ○ Less than half the time (4)
- ○ Almost never or never (5)
- ○ Not applicable (6)

Q16 Your ability to keep your erection until completion of sexual intercourse was:

- ○ Very satisfactory (1)
- ○ Somewhat satisfactory (2)
- ○ Neither satisfactory nor unsatisfactory (3)
- ○ Somewhat unsatisfactory (4)
- ○ Very unsatisfactory (5)

Q17 The length of time (from when you started sexual activity) until your erection was hard enough to participate in sexual intercourse was:

- ○ Very satisfactory (1)
- ○ Somewhat satisfactory (2)
- ○ Neither satisfactory nor unsatisfactory (3)
- ○ Somewhat unsatisfactory (4)
- ○ Very unsatisfactory (5)
- ○ Not applicable (6)

Q18 The length of time you were able to remain erect during intercourse was:

- ○ Very satisfactory (1)

- ○ Somewhat satisfactory (2)
- ○ Neither satisfactory nor unsatisfactory (3)
- ○ Somewhat unsatisfactory (4)
- ○ Very unsatisfactory (5)
- ○ Not applicable (6)

Q19 The overall quality of your erection was:

- ○ Very satisfactory (1)
- ○ Somewhat satisfactory (2)
- ○ Neither satisfactory nor unsatisfactory (3)
- ○ Somewhat unsatisfactory (4)
- ○ Very unsatisfactory (5)

Q20 Over the last 4 weeks, in general, how easy was it for you to reach orgasm?

- ○ I did not have any orgasms (1)
- ○ Very difficult (2)
- ○ Quite difficult (3)
- ○ Neither easy nor difficult (4)
- ○ Quite easy (5)
- ○ Very easy (6)

Q21 Over the last 4 weeks, in general, how much did you enjoy penetration and intercourse?

- ○ I did not take part in sexual activity (1)
- ○ Not enjoyable (2)
- ○ Slightly enjoyable (3)
- ○ Moderately enjoyable (4)
- ○ Very enjoyable (5)

○ Extremely enjoyable (6)

Q22 Over the last 4 weeks, how often did you experience pain in your vagina/genital area during or after sexual activity (e.g. penetration, intercourse)?

○ I did not take part in sexual activity (1)

○ Not at all (2)

○ Sometimes (3)

○ Often (4)

○ Very often (5)

○ Every time (6)

Q23 Over the last 4 weeks, how often did you have an orgasm when you took part in sexual activity (may be with or without a partner)?

○ I did not take part in sexual activity (1)

○ Not at all (2)

○ Sometimes (3)

○ Often (4)

○ Very often (5)

○ Every time (6)

Q24 Over the last 4 weeks, in general, how easy was it for you to reach orgasm?

○ I did not have any orgasms (1)

○ Very difficult (2)

○ Quite difficult (3)

○ Neither easy nor difficult (4)

○ Quite easy (5)

○ Very easy (6)

Q25 Over the last 4 weeks, did you feel good about yourself when you were sexually active?

- I did not take part in sexual activity (1)
- Not at all (2)
- Slightly (3)
- Moderately (4)
- Very (5)
- Extremely (6)

Q26 Over the last 4 weeks, how much emotional sexual arousal did you notice when you took part in sexual activity? (e.g. feeling excited, feeling 'turned on', wanting sexual activity to continue)

- I did not take part in sexual activity (1)
- None (2)
- Slightly aroused (3)
- Moderately aroused (4)
- Very aroused (5)
- Extremely aroused (6)

Questionnaire, Dutch version

Sexueel functioneren bij psoriasispatiënten

Q1 Leeftijd

	0 10 20 30 40 50 60 70 80 90 100
1 ()	

Q2 Geslacht

- Man (1)
- Vrouw (2)
- x (3)

Q3 Wat is uw geaardheid?

- Heteroseksueel (1)
- Homoseksueel (2)
- Biseksueel (3)
- Geen van bovenstaande (4)

Q4 Hoe lang geleden is de diagnose van psoriasis bij u gesteld?

- Minder dan 1 jaar geleden (1)
- Tussen 1 en 5 jaar geleden (2)
- Tussen 6 en 10 jaar geleden (3)
- Tussen 11 en 20 jaar geleden (4)
- Meer dan 21 jaar geleden (5)

Q5 Bij wie gebeurt de opvolging in kader van uw psoriasis voornamelijk?

- ○ Dermatoloog (1)
- ○ Huisarts (2)

Q6 Heeft u in het verleden reeds moeilijkheden gehad met uw psychisch of seksueel functioneren? Indien ja, bij welke hulpverlener kon u hiermee dan terecht?

- ☐ Huisarts (1)
- ☐ Dermatoloog (2)
- ☐ Andere zorgverlener (psycholoog, seksuoloog,...) (3)
- ☐ Andere (familie, vrienden,...) (4)
- ☐ Niet van toepassing (5)

Q7 Heeft uw uiterlijk invloed op uw identiteit of persoon?

- ○ Altijd (1)
- ○ Vaak (2)
- ○ Soms (3)
- ○ Zelden (4)
- ○ Nooit (5)

Q8 Heeft u zichzelf minder fysiek aantrekkelijk gevoeld ten gevolge uw ziekte of de behandeling ervan?

- ○ Altijd (1)
- ○ Vaak (2)
- ○ Soms (3)
- ○ Zelden (4)

○ Nooit (5)

Q9 Heeft u psoriasisletsels in het gelaat?

○ Ja (1)

○ Nee (2)

Q10 Heeft u psoriasisletsels in de liesstreek of genitale regio?

○ Ja (1)

○ Nee (2)

Q11 Hoe vaak heeft u stress gevoeld omtrent uw seksleven?

○ Altijd (1)

○ Vaak (2)

○ Soms (3)

○ Zelden (4)

○ Nooit (5)

Q12 Is het gemakkelijk voor u om in de stemming te komen voor seks?

○ Altijd (1)

○ Vaak (2)

○ Soms (3)

○ Zelden (4)

○ Nooit (5)

Q13 Zou uw verlangen naar seks sterker moeten zijn?

○ Altijd (1)

○ Vaak (2)

- ○ Soms (3)
- ○ Zelden (4)
- ○ Nooit (5)

Q14 Hoe schat u zelf de impact in die psoriasis op uw seksuele activiteiten heeft?

- ○ Onbestaand (1)
- ○ Zeer klein (2)
- ○ Klein (3)
- ○ Gemiddeld (4)
- ○ Groot (5)
- ○ Zeer groot (6)

Q15 U had, in het algemeen, in de afgelopen 4 weken erecties die stijf genoeg waren om uw partner te penetreren:

- ○ Bijna altijd of altijd (1)
- ○ Meer dan de helft van de tijd (2)
- ○ Ongeveer de helft van de tijd (3)
- ○ Minder dan de helft van de tijd (4)
- ○ Bijna nooit of nooit (5)
- ○ Niet van toepassing (6)

Q16 Uw vermogen om uw erectie te behouden tot het beëindigen van de geslachtsgemeenschap, in het algemeen, in de afgelopen 4 weken was:

- ○ Zeer bevredigend (1)
- ○ Enigszins bevredigend (2)
- ○ Noch bevredigend, noch onbevredigend (3)

- ○ Enigszins onbevredigend (4)
- ○ Zeer onbevredigend (5)

Q17 De tijdsduur (vanaf het moment waarop u met uw seksuele activiteiten bent begonnen) tot uw erectie stijf genoeg was om geslachtsgemeenschap te hebben, in het algemeen, in de afgelopen 4 weken was:

- ○ Zeer bevredigend (1)
- ○ Enigszins bevredigend (2)
- ○ Noch bevredigend, noch onbevredigend (3)
- ○ Enigszins onbevredigend (4)
- ○ Zeer onbevredigend (5)
- ○ Niet van toepassing (6)

Q18 De tijdsduur dat u uw erectie kon volhouden tijdens geslachtsgemeenschap, in het algemeen, in de afgelopen 4 weken was:

- ○ Zeer bevredigend (1)
- ○ Enigszins bevredigend (2)
- ○ Noch bevredigend, noch onbevredigend (3)
- ○ Enigszins onbevredigend (4)
- ○ Zeer onbevredigend (5)
- ○ Niet van toepassing (6)

Q19 De algemene kwaliteit van uw erectie, in de afgelopen 4 weken was:

- ○ Zeer bevredigend (1)
- ○ Enigszins bevredigend (2)
- ○ Noch bevredigend, noch onbevredigend (3)

- ○ Enigszins onbevredigend (4)
- ○ Zeer onbevredigend (5)

Q20 Hoe makkelijk was het voor u, in het algemeen, in de afgelopen 4 weken om een orgasme te bereiken?

- ○ Ik heb helemaal geen orgasmen gehad (1)
- ○ Zeer moeilijk (2)
- ○ Nogal moeilijk (3)
- ○ Noch makkelijk, noch moeilijk (4)
- ○ Nogal makkelijk (5)
- ○ Zeer makkelijk (6)

Q21 Hoeveel genoot u, in het algemeen, in de afgelopen 4 weken van penetratie en geslachtsgemeenschap?

- ○ Ik ben niet seksueel actief geweest (1)
- ○ Niet genoten (2)
- ○ Een beetje genoten (3)
- ○ Matig genoten (4)
- ○ Erg genoten (5)
- ○ Buitengewoon genoten (6)

Q22 Hoe vaak voelde u in de afgelopen 4 weken pijn in uw schede/genitale streek tijdens of na seksuele activiteit (bijv. penetratie, geslachtsgemeenschap)?

- ○ Ik ben niet seksueel actief geweest (1)
- ○ Helemaal niet (2)
- ○ Soms (3)

- ○ Vaak (4)
- ○ Zeer vaak (5)
- ○ Elke keer (6)

Q23 Hoe vaak had u in de afgelopen 4 weken een orgasme tijdens seksuele activiteit (met of zonder partner)?

- ○ Ik ben niet seksueel actief geweest (1)
- ○ Helemaal niet (2)
- ○ Soms (3)
- ○ Vaak (4)
- ○ Zeer vaak (5)
- ○ Elke keer (6)

Q24 Hoe makkelijk was het voor u, in het algemeen, in de afgelopen 4 weken om een orgasme te bereiken?

- ○ Ik heb helemaal geen orgasmen gehad (1)
- ○ Zeer moeilijk (2)
- ○ Nogal moeilijk (3)
- ○ Noch makkelijk, noch moeilijk (4)
- ○ Nogal makkelijk (5)
- ○ Zeer makkelijk (6)

Q25 Voelde u zich in de afgelopen 4 weken goed over uzelf tijdens seksuele activiteit?

- ○ Ik ben niet seksueel actief geweest (1)
- ○ Helemaal niet (2)
- ○ Een beetje (3)

- ○ Matig (4)
- ○ Heel goed (5)
- ○ Buitengewoon goed (6)

Q26 Hoe vaak had u in de afgelopen 4 weken gevoelens van emotionele seksuele prikkeling tijdens seksuele activiteit? (bijv. een opgewonden gevoel, willen dat de seksuele activiteit blijft duren)

- ○ Ik ben niet seksueel actief geweest (1)
- ○ Helemaal niet (2)
- ○ Soms (3)
- ○ Vaak (4)
- ○ Zeer vaak (5)
- ○ Elke keer (6)