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ORIGINAL RESEARCH ARTICLE

Burden to Partners of People with Psoriasis: Results from the FamilyPso International Study

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Abstract

Background Psoriatic disease is a lifelong chronic illness for which there is no cure. It is well established that psoriasis leads to a major impairment of health-related quality-of-life and wellbeing. Most people with psoriasis live together with partners, bringing along a major burden for them. The FamilyPso was created to measure this burden in psoriasis.

Objective The aim of the FamilyPso international study was to validate this tool and to show feasibility for the use of the FamilyPso across multiple countries.

Methods A prospective cohort study was conducted in 11 centers in Austria, Canada, Germany, Italy, Spain, and Turkey. The factor structure of the FamiliyPso was examined by confirmatory factor analysis (CFA) including tests of measurement invariance for gender and language. Subgroups (e.g., countries and gender) were tested for significant differences, and the relationship between the severity of illness and FamilyPso scores was tested for differences between countries using a mixed regression model. Descriptive statistics for items and scores are presented herein.

Results The cohort consisted of 556 people with psoriasis and their partners. Patients agreed that their partners would answer the questionnaire in their absence and return the forms to the centers. The mean age of patients and partners was 51 years. Psoriasis severity was mild in 57.6%, moderate in 31.5%, and severe in 10.9% of cases, and 91.3% received treatment. The results of the CFA confirmed the original factor structure with minor modifications. Self-assessed high severity of psoriasis was a predictor for a higher burden in 4/5 FamilyPso domains. There was an increased burden to partners related to the severity of psoriasis particularly in the domain "general emotional strain," including items such as a "feeling of helplessness." The results of the study showed that the FamilyPso could assess the burden of partners of people with psoriasis and can be used across different countries.

Conclusions The data can improve management of psoriatic disease and should be considered in shared decision-making.

1 Introduction

Psoriatic disease is a chronic illness for which there is no cure. With the advancement of new and effective therapies for long-term control of psoriatic disease the issue of health-related quality of life (hrQoL) has become increasingly important. A wealth of data demonstrates the burden of people with psoriasis and impairment on hrQoL [1].

People live with psoriasis around the clock and a partner and/or a family are involved in the entire daily life of the patient. Moderate-to-severe psoriasis causes a great deal of distress for not only people with psoriasis but also their partners and family members. An Italian study showed that divorce is more frequent if one partner has psoriasis compared with non-psoriasis couples (after 12 months 26.3% of patients with psoriasis divorced versus 8.2% of patients without psoriasis) [2].

Due to the paucity of tools currently available, there is very little information on the burden on partners and/or family members of people with psoriasis. Of those, the

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Key Points

People with psoriasis suffer from the disease owing to its stigmatizing nature but also due to additional work of cleaning, as well as the time spent for skin care and physicians' appointments. The FamilyPso questionnaire was developed to measure the burden of partners, and was validated and tested for its use across countries.

The results of the study show that the FamilyPso is able to assess the burden of partners and can be used in different countries. The data show that emotional aspects, such as a feeling of helplessness with the chronic illness of the partner, and increased cleaning efforts add to the burden that psoriasis imposes on partners.

This impact of psoriatic disease on partners of patients should be considered for improved management and care, and included in shared decision-making.

family dermatology life quality index (FDLQI) has been used occasionally [3]. A disadvantage of the FDLQI is that this generic tool is not psoriasis-specific and does not evaluate features that are of importance for those living together with a person affected by psoriasis.

To overcome these shortcomings, we have previously developed a psoriasis-specific PRO tool to assess the burden to partners and family members of people with psoriasis (FamilyPso) [4]. The development was based on a literature review and qualitative interviews with partners of patients. An expert group created a pilot version of 29 items, which was given to a sample of 96 people. Informed by exploratory factor analyses the expert group further reduced the number of items to 15. A final factor analysis resulted in defining five domains: A: social reactions; B: cleaning; C: acute emotional strain; D: social life; and E: general emotional strain.

Perceptions of psoriasis in a population (and/or within families and with partners) may vary from country to country and in societies. One important thread for people with chronic visible skin disorders, such as psoriasis, is stigmatization. Stigmatizing behavior is not only a problem in the public but can also be one in a partnership or in families [5].

The aim of the FamilyPso international study was to validate this instrument in a large cohort and to assess its suitability to be used in different countries/societies in a prospective manner. For this purpose, dermatology centers in six countries were engaged in the study. Demographics of patients and partners were recorded, in addition to psoriasis-specific data. We specifically aimed to confirm the factor structure of the FamilyPso and explore its reliability in relevant sub-samples (e.g., by gender).

2 Methods

2.1 Study Design

2.1.1 Participating Centers

The FamilyPso international study was a prospective, multinational, multicenter study conducted at centers of dermatology in Austria (Graz), Canada (Peterborough, Hamilton), Germany (Essen, Kiel), Italy (Bologna, Verona), Spain (Madrid, Pontevedra), and Turkey (Bursa, Edirne). The study was approved by the ethics committee of the principal investigator (U.M.; Ethics Committee of the University of Kiel, AZ: D 569/20). All centers received additional approval by their local ethics committees. Each center agreed to provide 50 completed FamilyPso questionnaires. For this purpose, patients were asked for their consent to hand out the FamiliyPso together with a demographic questionnaire to a partner aged > 18 years living in the same household. They also agreed that the respective partner completed the FamilyPso in their absence and without their engagement. Partners were provided with a pre-paid envelope to return the forms to the center.

2.1.2 Use of the FamilyPso Questionnaire

The FamilyPso questionnaire aims to measure the burden of partners of patients suffering from psoriasis. The wording of FamilyPso questions aims to primarily cover the emotional aspects and burden to partners or family members rather than aspects related to hrQoL.

The FamilyPso was developed in the German language and translated into English for publication. The English item text and the domains of the original version are shown in Supplementary Table 1.

For this study, additional translations were generated for Italian, Spanish (Spain), and Turkish (including cognitive debriefing) by a certified agency (Preference PRO Inc, Burlingame, USA). Translations were also generated for the information material given to patients and partners, instructions on how to use and handle the FamilyPso questionnaire, and a demographic sheet for patients and partners.

Patients/partners were recruited consecutively in each center and there were no inclusion or exclusion criteria apart from a dermatologist-confirmed diagnosis of plaque psoriasis. Severity of psoriasis was self-assessed using simple grading (mild, moderate, severe).

After completion of recruitment, the data were transferred electronically or by ordinary mail to the Kiel center. Data entry into an excel spreadsheet prepared for subsequent statistical analysis was performed by C.M. To validate the

data before further analysis, a double entry into a separate, identical spreadsheet was performed by an independent person that was not involved in the study. Both data matrices were then checked for internal consistency and any incongruencies were fixed. After a final check the data went into statistical analysis.

2.2 Statistical Analysis

The factor structure of the FamiliyPso was examined by confirmatory factor analysis (CFA) with R (packages lavaan V0.6-17-and semTools V0.5-6) [6, 7]. Some items were considerably skewed with non-normally distributed responses. Therefore, we used the "MLM" estimator (maximum likelihood estimation with robust standard errors). Goodness of model fit was assessed by common recommendations (Chi-squared n.s.; CFI/TLI > 0.95; SRMR/RMSEA < 0.08). Factor reliability was measured with MacDonald's ω. Measurement invariance was tested for gender and language.

The latent factor structure of the FamilyPso was defined according to the results of the main publication [3]. Descriptive statistics of the final five domain scores and the total score are provided for the total sample and for each center. Descriptive statistics include means, standard deviations, and quantiles for numeric variables, and frequencies and percentage for categorical variables. Subgroups (e.g., countries and gender) were tested for significant differences with analyses of variance (ANOVA) or *T* tests. Pairwise differences were tested with Tukey's HSD test. To test the relationship of the severity of illness with the FamiliyPso total score for differences between countries, we computed a mixed model (growth curves). Figures, parts of the descriptive statistics, correlations, *T* tests and ANOVAs were generated with SAS-JMP (V13.2.1).

Missing values were rare (e.g., < 2% for the FamilyPso domains; $4 \leq N_{\text{miss-items}} \leq 12$) and at random. We did not apply imputation procedures for missing values.

3 Results

3.1 Population Characteristics

The study was completed by the end of 2022. At the time of data bank closure, a complete dataset was received from Graz ($n = 50$), Peterborough ($n = 48$), Hamilton ($n = 56$), Essen ($n = 50$), Kiel ($n = 49$), Bologna ($n = 50$), Verona ($n = 50$), Madrid ($n = 50$), Pontevedra ($n = 50$), Bursa ($n = 52$), and Edirne ($n = 49$). Demographic data of patients recruited are given in Table 1.

There were more male (59.4%, range 42–80%) than female (40.6%, range 20–48%) patients with an overall mean age of 51 years and a mean duration of psoriasis of 21 years. In both Turkish centers the mean duration was shorter, around 16 years. The proportion of current smokers was 31.6%, but varied from 16% (Madrid) to 48% (Graz). Between 17% (Edirne) and 39% (Verona) of patients had psoriatic arthritis (mean 13.6%) and between 38% (both Spanish centers) and 66% (Graz), with a mean of 50.7% of all patients reporting that comorbidity. Most patients (91.3%) were currently treated [between 71% (Kiel) and 100% (Bologna, Verona, Pontevedra)]. Demographic data of partners are shown in Table 2.

3.2 Validation of the FamilyPso

The CFA of the original factor structure fitted insufficiently (Chi-squared = 258.9; df = 80; $p < 0.0001$; CFI = 0.925; TLI = 0.905; RMSEA = 0.090; SRMR = 0.049). Inspection of modification indices and covariances implied that item no. 9 "The pain or sleeping problems [of patient/partner] cause me stress" does not belong to the domain "B: cleaning." It is better explained by "C: acute stress," the stress factor attributed to acute psoriasis. Switching item 9 to domain C resulted in a good model fit (Chi-squared = 180.4; $df = 80$; $p < 0.0001$; CFI = 0.959; TLI = 0.947; RMSEA = 0.056; SRMR = 0.067). This is also supported by face validity regarding the item's content. Supplementary Table 2 shows descriptive item statistics, their standardized loadings (λ), and the reliabilities of the domains (ω).

Measurement invariance could be tested for gender, but not for center or country. The sizes of the latter subsamples were too small (N_{centers} ~50; $N_{\text{Austria}} < 50$). We tested measurement invariance for language instead (merging all German speaking centers; $N_{\text{de+au}} > 150$). For gender we obtained at configural and threshold invariance. For language we found configural invariance (Supplementary Table 3).

Overall, there was a FamilyPso median total score of 0.95 indicating a mild burden to partners living together with a person affected with plaque psoriasis (Fig. 1).

In a cross-country comparison there was a significant pairwise difference ($p < 0.05$; Fig. 1) between Italy ($M = 10.7$; SD = 4.3) and Austria ($M = 7.6$; SD = 4.0). A detailed description of country-specific differences is given in Supplementary Table 4.

The five domains of the FamilyPso in the entire cohort showed the least burden regarding social life and social reactions, followed by acute emotional strain and cleaning, and a higher burden in general emotional strain (Fig. 2). The domain "general emotional strain" consists of three items regarding sympathy, making it my own problem, and

Table 1 Demographic data of all patients for which partners provided a FamilyPso questionnaire [total number of participants: $n = 556$; *number of patients (%)]

Center	Sex*			Mean age (years)	Current smoker*	Employment status*				Duration of psoriasis (years)	PsA known*	Severity of psoriasis*			Comorbidity known*	Under current treatment*
	Female	Male	Other			Employed	Unemployed	Pensioner	Student			Mild	Moderate	Severe		
Graz (AU)	19 (38%)	31 (62%)	0 (0%)	48.22	24 (48%)	40 (80%)	7 (14%)	3 (6%)	0 (0%)	20.92	18 (36%)	40 (83%)	7 (15%)	1 (2%)	33 (66%)	49 (98%)
Peterborough (CDN)	28 (58%)	20 (42%)	0 (0%)	54.79	10 (21%)	21 (44%)	23 (48%)	3 (6%)	1 (2%)	22	12 (26%)	27 (56%)	14 (29%)	7 (16%)	22 (46%)	44 (92%)
Hamilton (CDN)	27 (48%)	29 (52%)	0 (0%)	55.58	10 (18%)	34 (62%)	19 (35%)	1 (2%)	1 (2%)	21.43	14 (31%)	28 (55%)	15 (29%)	8 (14%)	24 (43%)	44 (79%)
Essen (D)	18 (36%)	32 (64%)	0 (0%)	51.16	12 (25%)	40 (80%)	8 (16%)	2 (4%)	0 (0%)	24.96	15(32%)	11 (23%)	24 (50%)	13 (27%)	24 (48%)	47 (96%)
Kiel (D)	15 (30%)	33 (67%)	1 (2%)	49.81	17 (35%)	35 (71%)	10 (20%)	4 (8%)	0 (0)	21.52	10 (21%)	28 (58%)	15 (31%)	5 (10%)	26 (53%)	35 (71%)
Bologna (I)	20 (40%)	30 (60%)	0 (0%)	51.6	16 (32%)	34 (69%)	12 (25%)	2 (4%)	1 (2%)	18.56	14 (30%)	25 (51%)	23 (47%)	1 (2%)	29 (58%)	50 (100%)
Verona (I)	10 (20%)	40 (80%)	0 (0%)	58.92	14 (28%)	30 (60%)	20 (40%)	0 (0%)	0 (0%)	24.76	19 (39%)	41 (82%)	8 (16%)	1 (2%)	32 (64%)	50 (100%)
Madrid (ES)	21 (42%)	29 (58%)	0 (0%)	49.36	8 (16%)	39 (81%)	6 (13%)	3 (6%)	0 (0%)	22.75	10 (20%)	43 (86%)	5 (10%)	2 (4%)	19 (38%)	46 (94%)
Pontevedra (ES)	20 (40%)	30 (60%)	0 (0%)	49.14	17 (35%)	38 (76%)	9 (18%)	3 (6%)	0 (0%)	22.98	11 (22%)	19 (38%)	26 (52%)	5 (10%)	19 (38%)	50 (100)
Bursa (TR)	25 (48%)	25 (48%)	2 (4%)	46.08	23 (44%)	35 (67%)	9 (17%)	6 (12%)	2 (4%)	15.96	19 (37%)	29 (56%)	19 (37%)	4 (8%)	22 (42%)	47 (90%)
Edirne (TR)	23 (47%)	26 (53%)	0 (0%)	45.68	23 (46%)	39 (78%)	10 (20%)	1 (2%)	0 (0%)	16.55	8 (17%)	23 (46%)	15 (30%)	12 (24%)	31 (62%)	42 (84%)
Overall mean and SD	20.55 (5.0)	29.55 (4.8)	0.27 (0.62)	50.94 (3.89)	15.82 (5.39)	35 (5.34)	12.09 (5.53)	2.55 (1.56)	0.45 (0.66)	21.13 (2.85)	13.64 (3.65)	28.55 (9.25)	15.55 (6.69)	5.36 (4.07)	25.55 (4.81)	45.82 (4.30)

PsA psoriatic arthritis, *SD* standard deviation, *AU* Austria, *CDN* Canada, *D* Germany, *I* Italy, *ES* Spain, *TR* Turkey

Table 2 Demographic data of partners of patients with psoriasis [total number of participants: 556; *number of partners (%)]

Center	Status*			Mean age (years)	Employment status*				Total number in same household (mean)
	Wife	Husband	Partner		Employed	Unemployed	Pensioner	Student	
Graz (AU)	21 (44%)	6 (13%)	21 (44%)	45.63	38 (76%)	8 (16%)	1 (2%)	3 (6%)	2.98
Peterborough (CDN)	20 (42%)	18 (38%)	10 (21%)	59.73	23 (48%)	25 (52%)	0 (0%)	0 (0%)	2.54
Hamilton (CDN)	26 (47%)	22 (40%)	7 (13%)	55.55	27 (49%)	25 (45%)	2 (4%)	1 (2%)	3.14
Essen (D)	20 (43%)	12 (26%)	15 (32%)	51.21	35 (73%)	10 (21%)	3 (6%)	0 (0%)	2.65
Kiel (D)	25 (51%)	12 (24%)	12 (24%)	49.06	37 (74%)	10 (20%)	1 (2%)	2 (4%)	3.12
Bologna (I)	19 (38%)	18 (36%)	13 (26%)	51.86	38 (76%)	9 (18%)	3 (6%)	0 (0%)	2.82
Verona (I)	38 (76%)	9 (18%)	3 (6%)	57.5	32 (64%)	18 (36%)	0 (0%)	0 (0%)	3.08
Madrid (ES)	23 (46%)	16 (32%)	11 (22%)	48.94	33 (66%)	12 (24%)	5 (10%)	0 (0%)	2.94
Pontevedra (ES)	23 (47%)	16 (33%)	10 (20%)	49.16	40 (82%)	7 (14%)	2 (4%)	0 (0%)	3.22
Bursa (TR)	25 (49%)	18 (35%)	8 (16%)	48.53	28 (55%)	17 (33%)	3 (6%)	3 (6%)	3.56
Edirne (TR)	22 (44%)	27 (54%)	1 (2%)	46.94	40 (80%)	10 (20%)	0 (0%)	0 (0%)	3.21
Overall mean and SD	23.81 (4.99)	15.81 (5.64)	10.09 (5.25)	51.28 (4.28)	33.73 (5.43)	13.73 (6.24)	1.82 (1.53)	0.82 (1.19)	3.02 (0.27)

PsA psoriatic arthritis, *SD* standard deviation, *AU* Austria, *CDN* Canada, *D* Germany, *I* Italy, *ES* Spain, *TR* Turkey

feelings of helplessness. A detailed statistical analysis is given in Supplementary Table 5.

3.3 Assessment of Burden in the Study Population

Patients self-assessed the severity of psoriasis into mild (57.6%, range 23–86%), moderate (31.5%, range 10–52%), and severe (10.9%, range 2–24%). The patient's self-assessed high severity of psoriasis was a predictor for a higher burden of partners in all domains except for social reactions. The highest scores were found for the acute/general emotional strain and the cleaning domains (Fig. 3). The partners' burden increased by severity in each domain. The steepest slopes are found with emotional strain and cleaning. The cleaning domain was significantly associated with a higher FamilyPso score in female partners ($M_f = 1.20$; $M_m = 0.88$; $t = 2.70$; $df = 459$; $p < 0.007$).

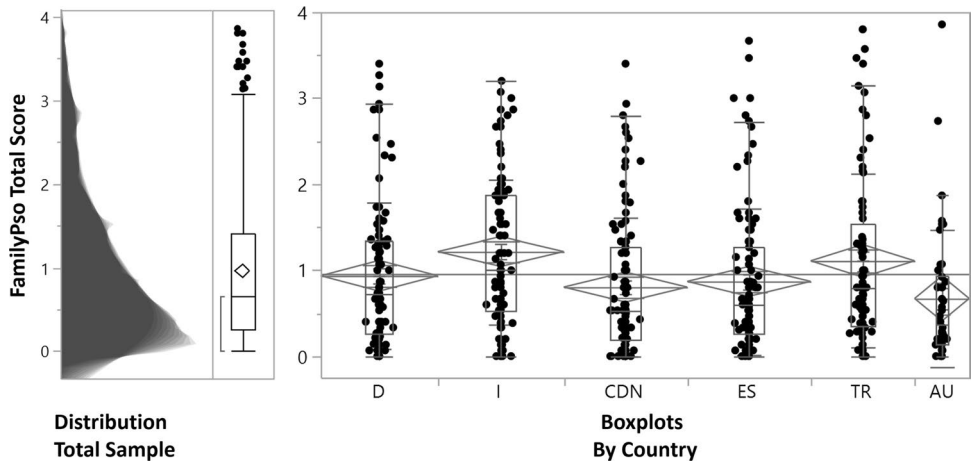

Fig. 1 FamilyPso total score of the entire partner cohort and per country. D, Germany; I, Italy; CDN, Canada; ES, Spain; TR, Turkey; AU, Austria. Interpretation of boxplots: middle horizontal line in box = median, upper/lower box include 25% of sample each; whiskers = range (except outliers); horizontal line in diamond = mean; upper/lower edge of diamond = ± SD; dots = cases. The width of each country's *x*-axis section is proportional to the relative sub-sample size. One way ANOVA by country ($df = 5,528$; $F = 4.07$; $p < 0.0012$)

3.4 Cross-Country Comparisons

We could show that the FamilyPso total score is related to the severity of the illness in the entire sample. Due to sampling differences, the mean level of strain by country may vary considerably, but the relation stays the same. To test this aspect of reliability, we computed two mixed linear regression models: One model allowing varying levels of the scores (random intercepts) between countries, but only one parameter for the growth by severity (fixed slope); the other model allowing both varying levels and potentially varying relationships by country (random intercepts and random slopes). Both models can be tested for a significant difference, thus allowing us to determine if one fixed slope is sufficient or varying (random) slopes are needed to fit the data. We found that the models were not significantly different (Chi-squared = 0.204; $df = 2$; $p < 0.903$) and therefore assume that the increase in stress with increasing severity of the disease does not differ between countries.

An additional summary of severity-associated variations in FamilyPso domains per country is given in Supplementary Table 6.

Data of the analysis regarding country-specific differences showed significant differences for the domains of social reactions, acute emotional strain, and social life. No significant difference was found regarding domain B: cleaning. Pairwise contrasts revealed that Italian centers reported a significantly higher burden to partners regarding social reactions, acute emotional strain, and social life compared with all other countries.

Among the many demographic data captured in the study it was shown that smoking comes with a significantly higher score of the domain C: social life ($M_{\text{smokers}} = 0.62$; $M_{\text{no}} = 0.45$; $t = -2.06$; $df = 511$; $p = 0.04$).

4 Discussion

Health-related quality of life and wellbeing are important narratives to judge the impact of a disease on affected people. In addition, the burden of disease is an additional aspect not only for people with the disease but also for the social environment and particularly for partners and/or families. Cultural beliefs and habits, as well as information about chronic diseases in a society may lead to differences in the perception of burden.

If a person is affected by a chronic stigmatizing illness, this brings a burden to partners and/or family. Psoriatic disease is a common condition for which there is no cure and patients, as well as their social environment, need to live and cope with it.

Surprisingly little is known about the life of partners of patients with psoriasis living in the same household. This may be because only few instruments have been described to measure hrQoL or burden in this important social environment [8]. Most data published have been generated by using the family dermatology life quality index (FDLQI), a generic tool that does not address the special needs of psoriasis [3]. Using this tool in 80 psoriasis patients, a Greek study showed that more than 88% of partners were affected by the disease and that their own hrQoL was impaired [9]. Similar data using the FDLQI were seen in a Spanish cohort of 130 participants [10].

Apart from the FamilyPso, only the Psoriasis Family Index (PFI) is specific for psoriasis [11]. However, only a refinement named PFI-14 is available but no data have been published using the tool [12]. The FamilyPso was developed to particularly cover emotional burden of partners. Apart from the study presented here the FamilyPso is used in a

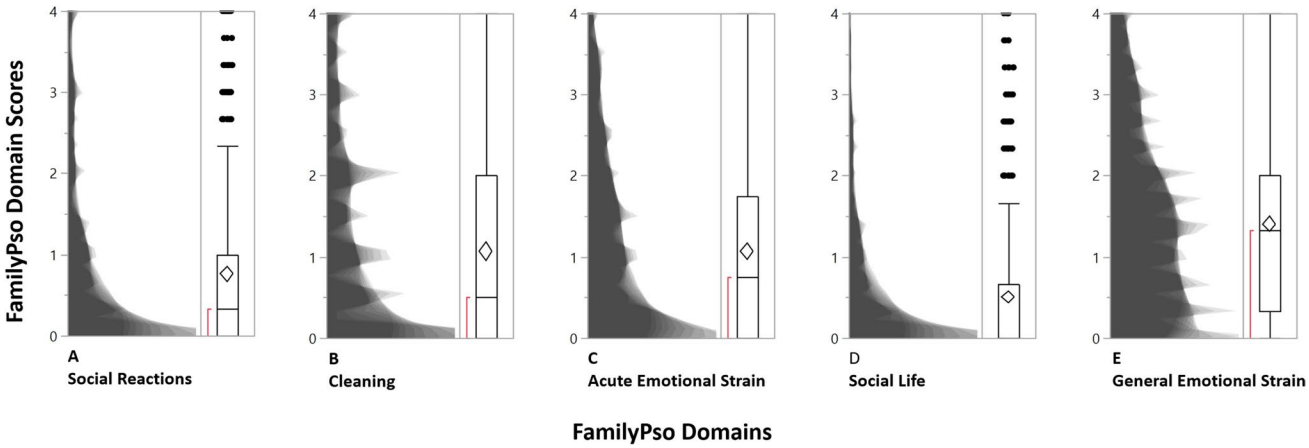

Fig. 2 FamilyPso domains scores (mean of ratings; $547 \leq n \leq 554$). Interpretation of boxplots: middle horizontal line in box = median, upper/lower box include 25% of sample each; whiskers = range (except outliers); diamond = mean

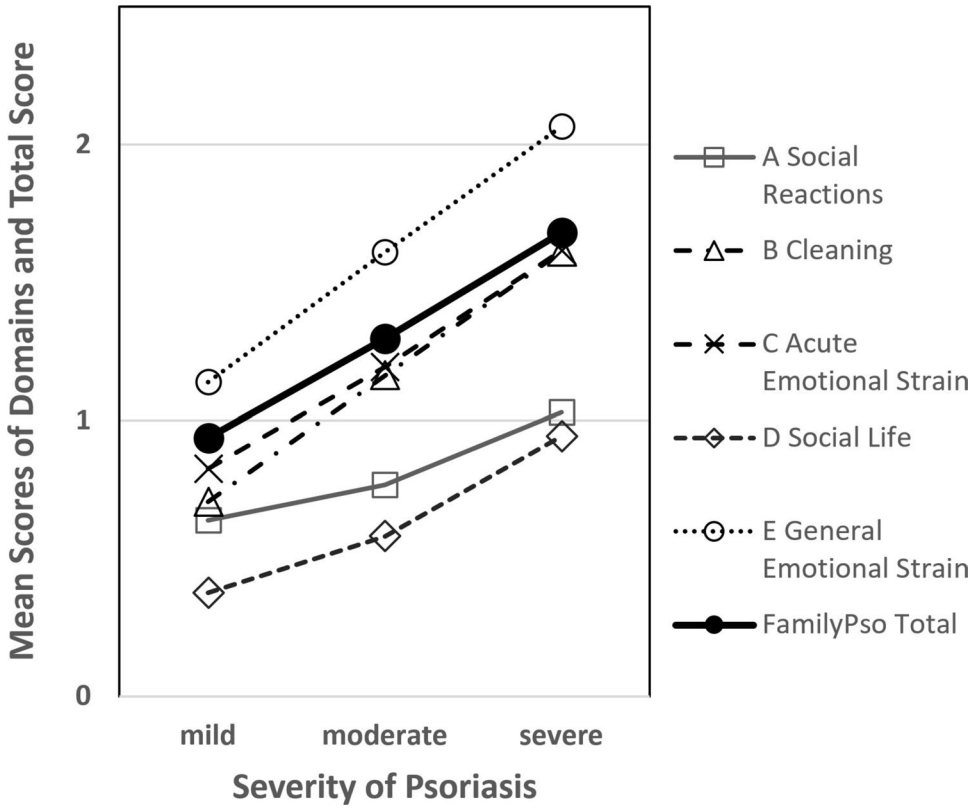

Fig. 3 FamilyPso domain scores related to psoriasis severity. Significant differences in domains A, C, D, and E

European multinational study which is currently ongoing [13].

Validating the questionnaire was a major aim of the FamilyPso international study. In addition, the burden to partners aged 18 years and above was assessed in six countries in parallel to prove its usefulness for cross-country/society comparisons. Demographic data of interest regarding patients and of their partners were captured.

The patients who were asked to complete the FamilyPso by their wife/husband or partner were middle-aged, with a long history of psoriasis and a high prevalence of psoriatic arthritis and comorbidity. As there were no inclusion or exclusion criteria for recruitment, this is an unselected cohort reflecting typical psoriasis patients presenting to outpatient dermatology practices or centers. Patients were asked to self-assess the severity of their current psoriasis, which was mostly mild, with 10.9% reporting severe disease, although there was wide variation between centers. More than 71% of patients were receiving treatment at the time of their assessment. We were able to show clear relationships between FamilyPso scores and self-rated psoriasis severity, which supports the validity of the instruments. Overall, the mean FamilyPso scores were found to be rather low. This may be due to the high rates of (presumably successfully) treated psoriasis in our samples. Depending on the rates of acute and severe psoriasis in a sample, mean FamilyPso scores may vary considerably. Further research and normative data are needed.

With the large sample of this investigation, we could validate the factorial structure of the FamilyPso by confirmatory factor analysis. The results implied a small modification for one item. In the original factor analysis, item 9 (stress caused by a partner's pain and sleeping problems) had been part of domain B, "cleaning." It is now part of domain C, "acute emotional strain," showing improved face validity. The former result may be due the small original sample size, and to scaling in acute psoriasis, as acute illness causes stress and more cleaning. Except for this change, the structure of the five domains showed stability, their reliability was acceptable or better, and a total score was defined.

Weak measurement invariance was confirmed for gender and language. This means that the factor structure of the instrument is stable, while it can identify level differences between cultures or other discriminating subgroups. The measurement invariance for languages seems to indicate that the translation was successful and that the domains of the FamilyPso are common, with valid concepts across the cultures studied.

Item and domain statistics are now available from a large international sample, allowing comparisons and interpretation of score levels. Overall, the reliability of the FamilyPso has been validated and its use in further

national and international research can be encouraged. On average, the FamilyPso total score showed low levels of partner distress across the study cohort. However, there was a clear dependency of burden and severity, with the highest being for the general emotional strain domain. This domain includes the items sympathy, making it my own problem, and feeling helplessness, which clearly describe the problem that chronic illness poses for partners. These findings are in line with data from a recent small qualitative study of 38 partners of psoriasis patients who reported in semi-structured interviews on emotional consequences such as embarrassment, frustration, helplessness, and pity [14]. Particularly wives and female partners had an increased score for the cleaning domain. This result is to be expected as women are generally more sensitive about cleanliness traditionally in many cultures, as women take the responsibility of cleaning their houses. Cleaning also adds to substantial out-of-pocket expenses that families may incur due to people having psoriasis [15].

There is data describing the impairment of the sexual life of patients, but also of partners [16, 17]. Sex life of partners is included in the domain acute emotional strain but the total score of this domain showed only a mild burden that may be explained by the majority having mild disease and being treated.

When comparing the data from the different centers the domains: social reaction, acute emotional strain, and social life had the highest scores in Italy compared with the other countries. This discrepancy is difficult to explain. Austria and Canada are among the top 15 countries in the recently published Global Happiness Report, while Italy is ranked 33rd. However, Spain is ranked 32nd and Turkey 106th, so there is no argument on a country-by-country basis regarding the happiness parameter (https://worldhappiness.report/ed/2023/).

The strengths of the FamilyPso international study are the wide coverage over countries from North America to Turkey, as well as the large number of people with psoriasis and their respective partners investigated. Some limitations of this study are that validation of the different language versions and a direct comparison with other instruments was not performed, and that the self-assessment of psoriasis severity by the patients may differ from a dermatologist's objective assessment, and may be biased in relation to the partners' perceived burden. However, self-assessment of psoriasis is more frequently used in web-based investigations [18]. Another limitation may be the restriction to partners above the age of 18 years; however, this was part of ethics approval. Addressing the burden of children of people with psoriasis living together with people with psoriasis may be the aim of future studies.

In conclusion, the data of the FamilyPso international study validated the FamilyPso questionnaire, induced minor modifications in the settings of the five domains, and provided a sound basis for its further use in clinical studies. Comparing the data from respondents over six countries it was shown that this instrument allows the comparisons of different populations regarding the burden to partners of people with psoriatic disease.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s40257-025-00944-w.

Declarations

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Ethical approval Reviewed and approved by Ethics Committee of the University of Kiel, AZ: D 569/20. The following centers accepted this vote: Peterborough, Hamilton, Essen, Kiel, Bologna, and Verona. Graz: EK-number: 33-413 ex 20/21. Madrid and Pontevedra: Registration number: 2021/207. Trakya and Bursa: Karrar No. 09/11.

Consent to participate/publish Participants gave their consent to participate in the study and consented to publication of the data.

Research data policy and data availability statement The data that support the findings of this study are available from the corresponding author upon reasonable request.

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