SHORT COMMUNICATION

Impact of the COVID-19 Pandemic on the Mental Health and Quality of Life of Patients with Psoriasis in Tertiary Care; A One-year Follow-up

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There are concerns about the psychological effects of the COVID-19 pandemic and quarantines on patients with psoriasis, given this population's increased pre-pandemic depression risk and putatively high suicidality (1, 2). Furthermore, many tertiary patients are considered at increased risk of COVID-19 due to immunomodulatory treatments, and were advised to follow stringent social distancing. A previous survey reported an early pandemic depression rate of 27.5% in psoriasis (2); however, the pre-pandemic rate in this sample was unknown; depression prevalence in psoriasis generally ranges from 22% to 34% (3). To our knowledge, there are no longitudinal data on mental health in psoriasis before and during the pandemic. The aim of this study was to investigate whether patients' depressive symptom levels and dermatology-related quality of life changed compared with pre-pandemic rates and during different pandemic waves. The study also captured 12-month suicidality among these patients during COVID-19.

MATERIALS AND METHODS AND RESULTS

Patients with dermatologist-confirmed psoriasis attending tertiary psoriasis and psoriatic arthritis clinics completed questionnaires at baseline and at a 1-year follow-up. Two cohorts were developed: a group recruited before COVID-19 was used to assess differences before vs during the pandemic ("pre-/early-pandemic" group); and a group recruited at the end of the first pandemic wave was used to assess change during the course of the pandemic ("pandemic-only" group) (Fig. S1). Baseline data were collected as part of another study, whose methods have been described previously (1). The Quick Inventory of Depressive Symptomatology-Self-Report (QIDS-SR) (4) and the Dermatology Life Quality Index (DLQI) (5) were used at both time-points. Lifetime suicidality (ideation and behaviour) at baseline and 12-month suicidality at follow-up were assessed with the Sheehan-Suicidality Tracking Scale (S-STS) (6). The pandemic-only group completed the Impact of Events Scale-Revised (IES-R; pandemic-adapted) (7).

Baseline vs follow-up questionnaire scores within each group were compared, using paired t-tests for total QIDS-SR; and Wilcoxon matched-pairs signed-rank tests for DLQI and QIDS-SR item scores with range 0–3. To assess baseline vs follow-up between-group differences in total scores, linear mixed effects models were fitted (predictor: time-group interaction; other fixed effects: age, sex and physical comorbidity). In a secondary analysis, cumulative link models were used to assess between-group differences for individual QIDS-SR items where Wilcoxon tests were significant after multiple comparisons correction, inclu-

ding covariates as for total scores. In the pandemic-only group, Spearman's correlation between mood change and psoriasis severity change was measured. Between-group difference in 12-month suicidality prevalence was investigated with age- and lifetime suicidality-adjusted logistic regression. No covariate data were missing; outcome missingness is reported in Table SI. p-values were corrected separately for within- and between-group comparisons, controlling for the false-discovery rate (FDR).

Results

Out of 119 respondents, 54 were enrolled pre-pandemic (September 2019–February 2020) and were followed-up during the second pandemic wave (October 2020–February 2021); 65 patients enrolled post-first wave (May–September 2020) and were followed-up pre-third wave, after lockdowns in England were eased (August–October 2021). Patient characteristics are shown in **Table I**. Baseline QIDS-SR was similar in the groups. Psoriasis severity did not differ between baseline and follow-up in the pandemic-only group, which had available data ($p = 0.17$).

No significant difference was found in follow-up vs baseline total QIDS-SR scores in either group (mean ± standard deviation (SD) pre-/early-pandemic group: 8.9 ± 5.2 vs 7.9 ± 5.6, $p = 0.32$; pandemic-only group: 9.1 ± 5.5 vs 8.5 ± 5.2, $p = 0.42$). There was no between-group difference in QIDS-SR longitudinal trends (β (95% confidence intervals; CI)) –0.31 (–1.75, 1.14), Table SI). When individual depressive symptoms were investigated (Table

Table I. Sociodemographic and clinical characteristics

Population characteristics	Pre-/early-pandemic group ($n = 54$)	Pandemic-only group ($n = 65$)	p-value
Age, years, mean (SD)	42.5 (11.0)	49.5 (10.1)	**< 0.001**
Sex, female, n (%)	23 (42.6)	25 (38.5)	0.787
Employment, employed/student, n (%)	38 (70.4)	50 (76.9)	0.608
Psoriasis treatment, biologic, n (%)	44 (81.5)	49 (75.4)	0.836
DLQI baseline, median (IQR)	3.0 (10.0)[b]	1.0 (5.5)[c]	**0.038**
saSPI-s baseline, median (IQR)	No data	1.0 (4.0)	
saSPI-s follow-up, median (IQR)	1.0 (2.7)	1.5 (6.4)	0.258
Psoriasis duration, n (%)	25.2 (11.3)	28.9 (12.6)	0.089
Body mass index, mean (SD)	30.1 (6.4)	32.9 (8.9)	**0.054**
Smoking, n (%)	11.0 (20.4)	6.0 (9.2)	0.143
Psoriatic arthritis, n (%)	15 (27.8)	28 (43.1)	0.151
Other physical comorbidities[a], n (%)	26 (48.1)	45 (69.0)	**0.032**
Lifetime depression diagnosis, n (%)	23 (42.6)	21 (32.3)	0.334
Lifetime suicidal ideation, n (%)	32 (59.3)	25 (40.3)	0.064
Antidepressant use, n (%)	11 (21.0)	14 (22.0)	0.609
QIDS-SR baseline, mean (SD)	8.6 (5.8)	8.7 (5.3)	0.961

[a]Lifetime diagnosis of cardiovascular, inflammatory, chronic infectious, malignant, neurological, endocrine or other severe disorders; [b]mean (SD) 6.9 (8.9); [c]mean (SD) 3.6 (5.3).
SD: standard deviation; saSPI-s: self-assessed Simplified Psoriasis Index for severity; IQR: interquartile range; QIDS-SR: Quick Inventory of Depressive Symptomatology Self-Report. Descriptive statistics are reported at baseline unless specified, and in non-missing data for each cell. p-values ≤ 0.05 are reported in bold.

SII), concentration was poorer during than before COVID-19 ($p=0.054$). Mood had worsened significantly by August–October 2021 in the pandemic-only group (item mean ± SD 0.95 ± 0.94 vs 0.68 ± 0.83; $p=0.03$); the between-group difference in mood trajectories was significant (*time*group* interaction: cumulative odds ratio (95% CI) 1.53 (1.09, 2.14); $p=0.045$). Mood deterioration did not correlate with the numerical change in psoriasis severity in the pandemic-only group (r=0.10, $p>0.9$).

The DLQI trajectories showed an opposing trend between groups ($p=0.098$; $p_{uncorrected}=0.059$), with numerical improvement of DLQI during compared with pre-pandemic (median ± interquartile range (IQR)) 1.0 ± 6.0 vs 2.0 ± 7.0, $p=0.36$), but numerical worsening in the pandemic-only group (median ± IQR 2.0 ± 5.0 follow-up vs 1.0 ± 5.5 baseline, $p=0.36$). The 12-month suicidality rate was higher during COVID-19 compared with the 12-month interval including pre-pandemic months, even after controlling for lifetime suicidality and FDR (27.9% in the pandemic-only group, 3 of whom had suicidal behaviour vs 15.2% in the pre-/early-pandemic group, none of whom had suicidal behaviour; odds ratio (95% CI) 5.72 (1.48, 27.40), $p=0.045$). In 23.5% of patients with 12-month suicidality, this was a new occurrence. By August 2021, 20% of the pandemic-only group had probable post-traumatic stress disorder (IES-R ≥33).

DISCUSSION

To our knowledge, this is the first study examining depression and suicidality trajectories in patients with psoriasis during COVID-19. Whilst patients' overall depressive symptom levels did not differ before vs during COVID-19 or between the examined pandemic waves, mood and 12-month suicidality deteriorated as the pandemic progressed. Our findings for the pre-/early-pandemic group align with recovery trends of the English general population affective burden by the end of the first wave (8), and the early psychological stability in other patient groups (9). Less is known about later pandemic stages. In a UK survey, whilst mental health remained stable in the general population by October 2020, it tended to worsen among the physically vulnerable (10). In the current study, depression levels during October 2020–February 2021, although numerically higher, did not significantly differ from pre-pandemic levels, and skin-related quality of life numerically improved. As most patients had chronic moderate-to-severe psoriasis (mean baseline disease duration 27.2 years, 78.1% on biologics), pre-developed coping strategies in response to long-standing illness (9) may have contributed to resilience. Notably, DLQI values were overall relatively low (1), aligning with similar tertiary cohorts before COVID-19 in England (11) and Spain (12). The groups' DLQI trends may further reflect a reduction in distressing social stimuli during lockdown or a lower attribution of patients' distress and impairment to psoriasis in the light of acute, pandemic-driven concerns and lifestyle restrictions (13).

The subsequent mood deterioration may suggest symptom-specific pandemic effects. Identifying worsening mental health dimensions is important for early intervention. A study in Wuhan, China, identified depressed mood and somatic symptoms as principal pandemic depression drivers (14). Neither psoriasis severity nor somatic depression dimensions worsened significantly in the current pandemic-only group. Also given the reversal trend of the DLQI trajectory later in the pandemic, stress-driven mood changes may have subsequently affected the perceived skin-related life quality during COVID-19 rather than the other way round. Twelve-month suicidality was higher in the pandemic-only group, despite lower baseline lifetime suicidality and depression compared with the pre-/early-pandemic group. In the general population, although suicides did not increase early into the pandemic, reports of other suicidal phenomena are inconclusive, with some studies showing an increase in suicidal thoughts (15).

These data provide important insights about psychological pandemic effects in psoriasis. The main strengths of this study are the longitudinal design and validated questionnaires. Study limitations include the possibility of false-negative results for small effects owing to the sample size, potentially limited generalizability in mild psoriasis and the lack of controls with other skin disease. It is currently critical for clinicians to monitor mood in psoriasis patients, offer timely treatments and remain vigilant about suicidality in the post-pandemic era. Increasing suicidality rates over time are concerning. Further research into long-term psychological outcomes and suicidality incidence is required.

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