Supplementary Information

Impact of Facial Atrophic Acne Scars on Quality of Life: A Multi-country Population-based Survey

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### Supplementary Table 1 Patient characteristics

|                     | Total sample | 18 to 24 years | 25 to 45 years | 46 to 55 years | P value* |
|---------------------|--------------|----------------|----------------|----------------|----------|
| n                   | 723 (100%)   | 92 (12.7%)     | 519 (71.8%)    | 112 (15.5%)    |          |
| Demographics        |              |                |                |                |          |
| Age (year), mean (SEM) | 35.1 (0.64)  | 21.75 (0.26)   | 34.15 (0.08)   | 50.28 (0.24)   |          |
| Sex, n (%)          |              |                |                |                | 0.299    |
| Male                | 350 (48.4%)  | 39 (42.7%)     | 252 (48.5%)    | 59 (52.3%)     |          |
| Female              | 373 (51.6%)  | 52 (57.3%)     | 267 (51.4%)    | 54 (47.7%)     |          |
| Country of residence, n (%) |          |                |                |                | 0.006    |
| USA                 | 258 (35.7%)  | 42 (45.3%)     | 161 (31.1%)    | 55 (49.0%)     |          |
| Canada              | 27 (3.7%)    | 3 (3.2%)       | 20 (3.9%)      | 4 (3.9%)       |          |
| Brazil              | 297 (41.1%)  | 31 (33.8%)     | 244 (47.0%)    | 22 (19.8%)     |          |
| EU (Germany, France, Italy) | 141 (19.5%) | 16 (17.7%)     | 94 (18.1%)     | 31 (27.2%)     |          |
| Type of residence, n (%) |          |                |                |                | 0.002    |
| Urban               | 477 (66.0%)  | 52 (57.2%)     | 375 (72.4%)    | 49 (43.8%)     |          |
| Suburban            | 178 (24.7%)  | 32 (34.6%)     | 106 (20.4%)    | 41 (36.3%)     |          |
| Rural               | 67 (9.3%)    | 7 (8.2%)       | 38 (7.2%)      | 22 (19.9%)     |          |
| Employment status       |  |  |  |  |
|-------------------------|---|---|---|---|
| Employed                | 501| 48 | 380| 73 |
|  (69.3%)(52.7%)(73.2%)(64.9%) |  |
| Self-employed           | 99 | 1  | 74 | 24 |
|  (13.7%)(14.2%)(21.3%)   |  |
| On sick leave           | 1  | 0  | 0  | 0  |
| Unemployed              | 56 | 13 | 37 | 6  |
|  (7.7%)(14.3%)(7.1%)     |  |
| Retired                 | 8  | 0  | 4  | 5  |
|  (1.7%)(29.7%)(39.7%)    |  |
| Student/Pupil           | 38 | 27 | 10 | 0  |
| Other                   | 20 | 2  | 13 | 5  |
| Education level         |  |  |  | 0.0027 |
| Undergraduate           | 366| 67 | 233| 65 |
|  (50.6%)(73.7%)(44.9%)(58.3%) |  |
| Graduate                | 348| 24 | 280| 45 |
|  (48.1%)(25.8%)(53.9%)(39.7%) |  |
| Other                   | 9  | 0  | 6  | 2  |
| Clinical information    |  |  |  | 0.278 |
| Fitzpatrick scale       |  |  |  |  |
| Light, pale white skin  | 32 | 3  | 18 | 10 |
|  (4.4%)(3.4%)(9.4%)      |  |
| White, fair skin        | 101| 7  | 74 | 20 |
|  (14.0%)(14.2%)(18.1%)  |  |
| Medium, white to olive  | 198| 29 | 136| 33 |
|  (27.4%)(31.8%)(26.2%)(29.2%) |  |
| Skin Type                                                                 | Count | Percentage |
|--------------------------------------------------------------------------|-------|------------|
| Brown skin, typical Mediterranean Caucasian skin, or Asian background    | 187   | 25.8%      |
| Latin, Central, or South American background (Fitzpatrick IV)            | 18    | 20.0%      |
|                                                                          | 135   | 26.0%      |
|                                                                          | 34    | 30.0%      |
| Dark brown skin; Mid-eastern skin types (Fitzpatrick V)                  | 170   | 23.5%      |
|                                                                          | 26    | 28.8%      |
|                                                                          | 131   | 25.1%      |
|                                                                          | 13    | 11.6%      |
| Black, very dark brown to black/Black skin (Fitzpatrick VI)              | 35    | 4.9%       |
|                                                                          | 7     | 7.8%       |
|                                                                          | 26    | 5.0%       |
|                                                                          | 2     | 1.7%       |
| Family history of acne scars, Yes, n (%)                                  | 481   | 66.6%      |
|                                                                          | 64    | 69.7%      |
|                                                                          | 345   | 66.4%      |
|                                                                          | 72    | 64.5%      |
| Age at facial acne onset (year), mean (SEM)                              | 14.2  | 0.24       |
|                                                                          | 13.02 | 0.51       |
|                                                                          | 14.35 | 0.26       |
|                                                                          | 14.58 | 0.66       |
| Facial acne duration (year), mean (SEM)                                  | 10    | 0.32       |
|                                                                          | 5.47  | 0.45       |
|                                                                          | 9.99  | 0.23       |
|                                                                          | 14.01 | 0.91       |
| Ever treated for facial acne, Yes, n (%)                                  | 516   | 71.3%      |
|                                                                          | 64    | 69.7%      |
|                                                                          | 377   | 72.6%      |
|                                                                          | 75    | 66.9%      |
| Facial acne treatment delay (year), mean (SEM)                           | 2.33  | 0.18       |
|                                                                          | 2.76  | 0.46       |
|                                                                          | 2.35  | 0.13       |
|                                                                          | 1.84  | 0.25       |
| Current facial acne scar severity, n (%)                                 | 228   | 31.6%      |
|                                                                          | 32    | 35.3%      |
|                                                                          | 169   | 32.5%      |
|                                                                          | 27    | 24.0%      |
| Mild                                                                     | 359   | 49.6%      |
|                                                                          | 47    | 51.8%      |
|                                                                          | 262   | 50.4%      |
|                                                                          | 50    | 44.2%      |
| Moderate                                                                 | 136   | 18.8%      |
|                                                                          | 12    | 12.9%      |
|                                                                          | 89    | 17.1%      |
|                                                                          | 36    | 31.8%      |
| Type of atrophic scars, n (%)                                            | 599   | 82.8%      |
|                                                                          | 85    | 92.8%      |
|                                                                          | 439   | 84.6%      |
|                                                                          | 75    | 66.4%      |
| Ice pick scars                                                           | 162   | 22.4%      |
|                                                                          | 8     | 21.0%      |
|                                                                          | 109   | 39.8%      |
|                                                                          | 45    | 44.2%      |
|                                |      |      |      |      |
|--------------------------------|------|------|------|------|
| Rolling scars                  | 53   | 3 (3.8%) | 36 | 14 | 0.044 |
|                                | (7.4%) | (6.9%) | (12.8%) |
| Duration of facial acne scars (year), mean (SEM) | 15.66 | 4.69 | 14.74 | 31.16 | 0.0001 |
|                                | (0.35) | (0.12) | (0.47) | (0.44) |
| Age at the onset of facial acne scars (year), mean (SEM) | 19.07 | 16.99 | 19.40 | 19.23 | 0.0001 |
|                                | (0.45) | (0.41) | (0.53) | (0.66) |
| Acne scar treatment received, Yes, n (%) | 226 | 29 | 180 | 17 | 0.006 |
|                                | (31.2%) | (31.6%) | (34.6%) | (15.2%) |
| Acne scar treatment delay, year, mean (SEM) | 2.00 | 0.65 | 2.05 | 3.37 | 0.151 |
|                                | (0.26) | (0.08) | (0.16) | (1.91) |

*P value for comparison across age groups*
Supplementary Table 2 Odds ratios for a score in the range of ‘very large’ impact of facial acne scars on HRQOL (per DLQI) in crude and adjusted logistic regression models, with age, sex, residential background and country of residence, acne scar severity grade, type of skin, education, and employment status as explanatory variables

| Explanatory variables | Crude OR | Crude 95% CI | Crude P value | Adjusted OR | Adjusted 95% CI | Adjusted P value |
|-----------------------|----------|--------------|---------------|-------------|-----------------|-----------------|
| Sex                   |          |              |               |             |                 |                 |
| Male                  | ref      | ref          | ref           |             |                 |                 |
| Female                | 0.90     | 0.67 to 1.20 | 0.383         | 0.86        | 0.66 to 1.10    | 0.174           |
| Age group (year)      |          |              |               |             |                 |                 |
| 18-24                 | ref      | ref          | ref           |             |                 |                 |
| 25-45                 | 0.80     | 0.37 to 1.72 | 0.493         | 0.51        | 0.19 to 1.36    | 0.138           |
| 46-55                 | 0.35     | 0.19 to 0.62 | 0.006         | 0.20        | 0.13 to 0.30    | 0.0001          |
| Type of residence     |          |              |               |             |                 |                 |
| Urban                 | ref      | ref          | ref           |             |                 |                 |
| Suburban              | 0.54     | 0.44 to 0.65 | 0.0001        | 0.59        | 0.33 to 1.04    | 0.062           |
| Rural                 | 0.63     | 0.29 to 1.41 | 0.205         | 0.75        | 0.23 to 2.43    | 0.563           |
| Work situation        |          |              |               |             |                 |                 |
| Active                | ref      | ref          | ref           |             |                 |                 |
| Inactive              | 0.34     | 0.16 to 0.72 | 0.014         | 0.31        | 0.10 to 0.91    | 0.039           |
| Education             |          |              |               |             |                 |                 |
| Undergraduate         | ref      | ref          | ref           |             |                 |                 |
| Graduate              | 1.40     | 1.01 to 1.93 | 0.045         | 1.30        | 1.08 to 1.57    | 0.016           |
| Fitzpatrick scale     |          |              |               |             |                 |                 |
| Type I – Light, pale white & | ref      | ref          | ref           |             |                 |                 |
| Type II – White, fair |          |              |               |             |                 |                 |
| Type III – Medium, white to olive | 1.41     | 0.61 to 3.23 | 0.336         | 1.34        | 0.61 to 2.94    | 0.387           |
| Type       | Acne scar severity | Odds Ratio | 95% CI     | p-value | Odds Ratio | 95% CI     | p-value |
|------------|--------------------|------------|------------|---------|------------|------------|---------|
| Type IV – Olive, moderate brown | Mild | ref | ref | | | | |
| | Moderate | 1.05 | 0.78 to 1.42 | 0.688 | 1.10 | 0.87 to 1.38 | 0.346 |
| | Severe/very severe | 2.15 | 1.63 to 2.84 | 0.001 | 2.59 | 2.00 to 3.36 | 0.0001 |
| Type V – Brown, dark brown | | | | | | | |
| Type VI – Black, very dark brown to black | | | | | | | |

*Country of residence was also included in the adjusted analyses.*
**Supplementary Fig 1** Mean DLQI scores for each questionnaire item (Q1-Q10). Mean DLQI scores based on age groups (a) and sex (b).

(a) Each question is scored from a minimum of 0 (i.e., no impact on HRQOL) to a maximum of 3 (i.e., very strong impact on HRQOL); Q: DLQI questionnaire item number; P values for the comparison of DLQI scores across age groups for adjusted analyses including age, sex, residential background and country of residence, acne scar severity grade, type of skin, education, and employment status are as follows: Q1=0.001; Q2=0.007; Q3=0.008; Q4=0.011; Q5=0.002; Q6=0.419; Q7=0.001; Q8=0.006; Q9=0.097; Q10=0.014.

(b) Each question is scored from a minimum of 0 (i.e., no impact on HRQOL) to a maximum of 3 (i.e., very strong impact on HRQOL); Q: DLQI questionnaire item number; P values for the DLQI score comparison between male and female subjects for adjusted analyses including age, sex, residential background and country of residence, acne scar severity grade, type of skin, education, and employment status are as follows: Q1=0.002; Q2=0.004; Q3=0.284; Q4=0.141; Q5=0.441; Q6=0.177; Q7=0.532; Q8=0.075; Q9=0.143; Q10=0.383.
Mean DLQI score by gender

Q10: Treatment difficulties
Q9: Sexual difficulty
Q8: Interpersonal problems
Q7: Work/Study
Q6: Sport
Q5: Social or leisure activities
Q4: Choice of clothes
Q3: Daily activities
Q2: Embarrassment *
Q1: Physical symptoms *

FEMALE    MALE

0  0.2  0.4  0.6  0.8  1  1.2  1.4  1.6