Analysis of health care and actual needs of patients with psoriasis: a survey on the Italian population

Emma Altobelli*1, Mara Maccarone2, Reimondo Petrocelli1, Ciro Marziliano1, Alberto Giannetti3, Ketty Peris4 and Sergio Chimenti5

Address: 1Department of Internal Medicine and Public Health, University of L’Aquila, Coppito-Delta 6, 67100 L’Aquila, Italy, 2Italian Association of Psoriatic Patients (ADIPSO), Rome, Italy, 3Department of Dermatology, University of Modena and Reggio Emilia, Italy, 4Department of Dermatology, University of L’Aquila, Italy and 5Department of Dermatology, University of Rome Tor Vergata, Italy

Email: Emma Altobelli* - emmaalto@tin.it; Mara Maccarone - segreteria@adipso.org; Reimondo Petrocelli - r.petrocelli@libero.it; Ciro Marziliano - c.marziliano@ec.univaq.it; Alberto Giannetti - giannetti.alberto@unimore.it; Ketty Peris - peris@univaq.it; Sergio Chimenti - chimenti@dermatologica.it

* Corresponding author

Abstract

Background: Over recent years the public health system has shown increasing interest in patients’ views for use as guideline criteria in evaluating the quality of assistance above all for those patients with chronic diseases. Hence the interest in psoriasis, which is a chronic disease frequently associated with diabetes mellitus, hypertension, obesity, and cardiovascular diseases. The aims of our study were to describe clinical characteristics of patients with psoriasis, the quality of the assistance perceived by patients arrived at outpatients clinics and the information received, in order to identify areas in Italy requiring improvement.

Methods: 1954 patients, aged between 18 and 85 years, were consecutively enrolled at outpatients clinics across 21 Italian provinces over the period December 2004 – January 2006. A standardized questionnaire was developed in collaboration with an Italian Association of Psoriatic Patients (A.DI.PSO) and tested in a pilot study. The questionnaire was divided into three sections: the first section included social, demographic and individual variables; the second concerned the quality of the assistance perceived by the patients at public dermatologic clinics and the third focused on the need of information requirements of patients with psoriasis. The \( \chi^2 \) test was used to estimate the association between the categorical variables under study. Kruskal-Wallis test was applied to the interval and ordinal variables.

Results: The presence of psoriatic arthritis was reported in 26.0% of patients. Associated chronic diseases included depression (15.4%), hypertension (13.3%), obesity (8.9%) and type 2 diabetes mellitus (7.3%). The study highlighted the need of improvements of health care services at public dermatologic clinics especially in overcoming architectonic barriers and reducing appointment wait-times, particularly in South Italy. However, patients reported a positive relationship with Health System employers due to the confidentiality. This positive impression was confirmed by the observation that dermatologists were considered the best source of information about therapies on psoriasis.

Conclusion: Our study allowed to identify critical aspects which could be tackled through initiatives with the aim of improving these emerged needs.
Background
Psoriasis is a chronic disease with a different prevalence between countries varying from 0.8 to 3.1% [1,2]; psoriatic arthritis (PsA) has been found to be associated with skin lesions in 20–34% of patients [3-5]. Psoriasis has a significant involvement on patients' quality of life and their social and family relationships [6,7]. In addition, psoriasis has proven to be frequently associated with chronic extra-cutaneous diseases such as diabetes mellitus (DM), hypertension, obesity, and cardiovascular diseases [8-10].

Over recent years, the public health system has shown increasing interest in the quality of medical care as well as in the patients' degree of satisfaction which in turn represents a useful indicator of the quality of health care. In fact, it is known that a positive perception of medical services by the patients, a good relationship between patients and medical staff and a comfort of the surroundings improve the doctor-patient relationship leading to enhanced therapeutic compliance, better quality of the health service and saving of economical resources. Furthermore, the level of information given to the patient about their disease may improve disease management and hence quality of life.

The aims of our study were to describe: i) the clinic characteristics of patients with psoriasis, ii) the quality of medical care as perceived by the patients at public dermatologic clinics, and iii) the information received by the patient, in order to identify areas in Italy with priority need of improvement.

Methods
Study population
The study population consisted of 1954 patients, aged 18–85 years, who were consecutively enrolled into the study over the period 1st December 2004 – 31st January 2006: 991 patients were males with an average age of 48.4 years (standard deviation [sd] 15.0) and 963 were females with an average age of 47 years (standard deviation [sd] 15.0). Patients attended the public dermatologic clinics taking part in the project across 21 Italian provinces: Ascoli Piceno, Bari, Benevento, Bologna, Brindisi, Brescia, Catania, Catanzaro, Cesena-Forlì, Firenze, L'Aquila, Lucca, Milano, Modena, Napoli, Palermo, Padova, Prato, Reggio-Calabria, Roma, Verona. To improve the efficiency of the sampling plan, stratified sampling by province was used: to estimate the sampling dimension the following parameters were used: sample error E = 0.025, the event occurrence proportion p = 0.5 (in the case of maximum variability), probability 1-α = 0.95.

Data collection
A standardized questionnaire, developed in close collaboration with an Italian Association of Psoriatic Patients (Associazione per la Difesa dei Pazienti Psoriasici, A.D.I.P.S.O) and tested in a pilot study, was used for data collection. The questionnaire was explained by trained personnel to the patients when they underwent routine visits at dermatologic clinics; patients completed the questionnaire singularly and autonomously. The questionnaire was divided into three parts: the first section concerned patients' social, demographic and case history variables such as smoking and alcohol consumption, associated diseases such as depression, hypertension, type 2 DM and obesity. All diagnoses were reported by patients: they were asked to provide the age of psoriasis (defined as the age of patients at the first dermatologic visit for psoriasis) while diagnoses of associated disease was conceivably established by other specialists but not verified by us. The second part focused on the quality of the assistance perceived by the patients at public dermatologic clinics and took into account parameters such as the accessibility of the dermatologic clinic (e.g. the presence of architectural barriers), the programming of routine visits, the time spent in the waiting room of the clinic, the quality of the waiting room (e.g. comfort, privacy etc.), and the third part looked at the information needs of the patients.

Informed consent was obtained from all subjects. All of the subjects who were invited to participate in the study agreed to do so.

Statistical analysis
The data collection was analyzed by grouping the patients in the participating provinces into three geographical areas: North, Centre and South.

The χ² test was used to estimate the association between the categorical variables under study. Kruskal-Wallis test was applied to the interval and ordinal variables. A value of p < 0.05 was considered statistically significant. SAS software was used for the statistical analyses [11].

Results
The results of the first section of the questionnaire are summarized in tables 123. No differences were found for marital status between the three areas: North, Centre and South Italy. However a statistically significant difference was detected concerning education (p < 0.0001). Out of 1947 patients interviewed, 2.7% had not received education. The lower level of education was observed in the South whilst the highest level of education was found in the Centre (p = 0.0006). A statistically significant difference was also found for occupational status; the highest level of unemployment was detected in the South (p <
Overall, 45.4% of the patients were smokers; 45.2% drank wine, 11.9% beer and 9.1% spirits. The distribution of smokers and drinkers was analyzed for the three geographical areas (table 2). The heaviest smokers (>20 cigarettes per day) were in the South in the 20–39 age group (52.7%, p = 0.0006). There was no significant difference between the three areas in the group of patients 40–59 years of age. The heaviest wine consumption (> 2 glasses/day) in those that drink was in the North in the ≥ 60 age group (p = 0.001). Beer (> 2 glasses/day) and spirit (< 2 glasses/day) consumption was greater in South Italy in the 20–39 age group being 15.8% and 69.2%, respectively.

PsA was reported in 26.0% of patients. The most frequent extra-cutaneous diseases associated with psoriasis were depression (15.4%), hypertension (13.3%), obesity (8.9%) and type 2 DM (7.3%). PsA was associated with obesity in 36% of cases (p = 0.0007), type 2 DM in 34% of cases (p = 0.03), hypertension in 32% of cases (p = 0.02) and depression in 30% of cases although the latter result was not statistically significant. Table 3 shows the distribution of the extra-cutaneous diseases associated with psoriasis by stratified area and gender. The distribution of depression differed between North, Centre and South Italy in men with the highest percentage being 18.7% (p = 0.0004) in Centre Italy. No significant distribution was observed for hypertension between North, Centre or South or in men or women. Type 2 DM in female patients was higher in the South (13.0%, p = 0.02).

The results of the second part of the questionnaire concerning the quality of medical services perceived by the patients at public dermatologic clinics are summarized in table 4. Better access in terms of lack of architectonic barriers was registered in the North as compared to the South (p < 0.0001). The number of routine visits was higher in the North (every 30 days) than in the South (once a year) (p < 0.0001). However patients in the North changed dermatologic clinics more frequently than patients in the South (p < 0.0001). Patients attending dermatologic clinics in the North were more satisfied by levels on accessibility, time (minutes) spent in the waiting room and quality of the time in the waiting room (p < 0.0001). In addition, patients attending dermatologic clinics in the North were more satisfied by levels of confidentiality and privacy and by the levels of helpfulness and courtesy of the health system personnel with respect to patients attending clinics in the South (p < 0.0001). The results concerning the patients’ knowledge about psoriasis and need of information are summarized in table 5. Patients in the North were more satisfied with the explanation of their disease by their dermatologist and general practitioner (p < 0.0001). There was also a statistically significant difference between the three geographical areas as far as the information source on disease treatment was concerned. Patients living in the Centre felt they needed more information concerning therapy (p < 0.0001). Notably, only 29.5% of patients were aware of patients’ rights and there was no significant difference between North, Centre and South Italy. Finally, the knowledge of homeopathy and herbal products was more widespread in the South (p < 0.0001) as was the knowledge of therapies such as acupuncture and the use of phototherapy (p = 0.005).

**Discussion**

This study is the first one in Italy to be carried out using a questionnaire developed in close collaboration with a National Psoriasis Patient Association named A.DI.PSO. This methodological choice was based on the assumption that suggestions from the Association would correspond more closely to the actual needs of psoriatic patients. In fact, as expected, the data from this study allowed us to identify areas in Italy requiring improvement. It emerged that preventive programmes are required for risk factors such as smoking and drinking [12-15], especially in central and southern Italy for smokers in the 20–59 age groups and for drinkers (>2 glasses/day) in the North in the ≥ 60 age group.
### Table 2: Distribution of smoking and alcohol consumption in the 3 Italian areas

| Age-group (years) | Italy | North No. % | Centre No. % | South No. % | p | North No. % | Centre No. % | South No. % | p |
|-------------------|-------|--------------|--------------|-------------|---|-------------|--------------|-------------|---|
| Cigarettes per day (total no. of cases: 759) |       |              |              |             |   |             |              |             |   |
| < 5               |       | 14 (14.1)    | 5 (4.6)      | 16 (23.5)   | 0.0005 | 6 (6.1)     | 18 (15.4)    | 12 (9.2)    | 0.11 |
| 5–15              |       | 61 (61.6)    | 58 (53.7)    | 24 (35.3)   |   | 43 (43.9)   | 42 (35.9)    | 55 (42.0)   | 0.21 |
| 16–20             |       | 10 (10.1)    | 23 (21.3)    | 11 (16.2)   |   | 31 (31.6)   | 33 (28.2)    | 28 (21.4)   | 10 (19.6)  |
| > 20              |       | 14 (14.2)    | 22 (20.4)    | 17 (25.0)   |   | 18 (18.1)   | 24 (20.5)    | 36 (27.4)   | 14 (27.4)  |
| Wine consumption (total no. of cases: 857) |       |              |              |             |   |             |              |             |   |
| 1–2 glasses/day   |       | 56 (82.3)    | 56 (80.0)    | 36 (83.7)   | 0.87 | 99 (72.3)   | 104 (68.9)   | 98 (76.0)   | 0.42 |
| 2 glasses/day     |       | 12 (17.7)    | 14 (20.0)    | 7 (16.3)    |   | 38 (27.7)   | 47 (31.1)    | 31 (24.0)   | 0.36 |
| Beer consumption (total no. of cases: 233) |       |              |              |             |   |             |              |             |   |
| 1–2 glasses/day   |       | 36 (87.8)    | 33 (91.7)    | 16 (84.2)   | -  | 28 (90.3)   | 20 (83.3)    | 34 (82.9)   | - 11 |
| 2 glasses/day     |       | 5 (12.2)     | 3 (8.3)      | 3 (15.8)    |   | 3 (9.7)     | 4 (16.7)     | 7 (17.1)    | 1.83 |
| Spirits (total no. of cases: 178) |       |              |              |             |   |             |              |             |   |
| I drink/day       |       | 12 (70.6)    | 13 (81.2)    | 4 (30.8)    | 0.01 | 16 (72.7)   | 17 (51.5)    | 23 (67.6)   | 0.21 |
| 1 drink/day       |       | 5 (29.4)     | 3 (18.8)     | 9 (69.2)    |   | 6 (27.3)    | 16 (48.5)    | 11 (32.4)   | 3 |

P values were calculated for the items whose expected values were more than 5 for 80% of cells and none expected value less than 1.

### Table 3: Distribution of extra-cutaneous disease associated with psoriasis in the 3 Italian areas

| Disease category (ICD code number) | Males (total no. of cases: 991) | Females (total no. of cases: 963) |
|------------------------------------|----------------------------------|----------------------------------|
|                                   | North No. (%)  | Centre No. (%)  | South No. (%)  | p   | North No. (%)  | Centre No. (%)  | South No. (%)  | p   |
| Depression (296)                  |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 34 (8.6)          | 56 (18.7)         | 43 (14.6)         |     | 59 (18.7)       | 53 (16.8)        | 57 (17.2)        |     |
| Absent                            | 363 (91.4)        | 244 (81.3)        | 251 (85.4)        | 0.0004 | 257 (81.3) | 263 (83.2) | 274 (82.8) | 0.81 |
| Myalgia (729.1)                   |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 0 (0.0)           | 2 (0.7)           | 3 (1.0)           |     | 0 (0.0)         | 6 (1.9)          | 7 (2.1)          |     |
| Absent                            | 397 (100.0)       | 298 (99.3)        | 291 (99.0)        | -   | 316 (100.0)     | 310 (98.1)       | 324 (97.9)       | -   |
| Obesity (278)                     |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 39 (9.8)          | 23 (7.7)          | 27 (9.2)          |     | 29 (9.2)        | 32 (10.1)        | 34 (10.3)        |     |
| Absent                            | 358 (90.2)        | 277 (92.3)        | 267 (90.8)        | 0.61 | 287 (98.8)      | 284 (89.9)       | 297 (89.7)       | 0.88 |
| Type 2 DM (250)                   |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 29 (7.3)          | 15 (5.0)          | 21 (7.19)         |     | 23 (7.3)        | 12 (3.8)         | 43 (13.0)        |     |
| Absent                            | 368 (92.7)        | 285 (95.0)        | 273 (92.9)        | 0.42 | 293 (92.7)      | 304 (96.2)       | 288 (87.0)       | < 0.0001 |
| Hypertension (401)                |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 71 (17.9)         | 52 (17.3)         | 38 (12.9)         |     | 41 (13.0)       | 24 (7.6)         | 35 (10.6)        |     |
| Absent                            | 326 (82.19)       | 248 (82.7)        | 256 (87.1)        | 0.18 | 275 (87.0)      | 292 (92.4)       | 296 (89.4)       | 0.08 |
| Heart disease (410–414)           |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 7 (1.8)           | 2 (0.7)           | 14 (4.8)          |     | 1 (0.3)         | 0 (0.0)          | 7 (2.1)          |     |
| Absent                            | 390 (98.2)        | 298 (99.3)        | 280 (95.2)        | 0.003 | 315 (99.7) | 316 (100.0) | 324 (97.9) | - |
| Herpes virus (054)                |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 5 (1.3)           | 11 (3.7)          | 10 (3.4)          |     | 18 (5.7)        | 15 (4.7)         | 10 (3.0)         |     |
| Absent                            | 392 (98.7)        | 289 (96.3)        | 284 (96.6)        | 0.08 | 298 (94.3)      | 301 (95.3)       | 321 (97.0)       | 0.25 |
| Other *                           |                   |                   |                   |     |                   |                   |                   |     |
| Present                           | 2 (0.5)           | 4 (1.3)           | 10 (3.4)          |     | 3 (1.9)         | 6 (2.8)          | 6 (1.8)          |     |
| Absent                            | 395 (99.5)        | 296 (98.7)        | 284 (96.6)        | 0.01 | 310 (98.1)      | 307 (97.2)       | 325 (98.2)       | 0.61 |

1 ICD = IX International Classification Diseases

* iritis (364), lupus (710.0)

P values were calculated for the diseases whose expected values were more than 5 for 80% of cells and none expected value less than 1.
The frequency of PsA in our study population was 26% which is within the range reported by other authors [3-5,16]. The highest frequency of PsA was in the North (48.1%) and in men. The presence of PsA complicates disease management due to both its physical and emotional impact: PsA often makes simple everyday activities difficult whilst on an emotional level can cause anxiety and depression [17]. The complexity of management of psoriasis can also be aggravated, as in our population series, by the concomitant occurrence of other diseases such as obesity in 36% of patients, type 2 DM (34%) and hypertension (32%) and depression (30%). The distribution of obesity and hypertension did not differ for geographical area or gender, whilst type 2 DM had a higher frequency in females in the South. The association of such diseases with psoriasis is often due to nutritional factors such as a high-calorie diet. In fact, improvement of psoriasis in places with an insufficient food supply (e.g. prison camps) has been reported [18,19]. If the problem therefore lies with lifestyle, then the approach to be adopted by the public health system should focus on health education and health promotion as means of prevention.

A further aspect we investigated in this study was the quality of the assistance perceived by the patient at public dermatologic clinics on an organizational and comfort level.

### Table 4: Distribution of quality of the assistance perceived by patients in the 3 Italian areas

| Item | Total responders | North | Centre | South | p |
|------|------------------|-------|--------|-------|---|
| Clinic accessibility | | | | | |
| Bad | 1813 | 92.8 | 50 | 7.5 | 48 | 8.5 | 134 | 22.9 | < 0.0001 |
| Poor | 66 | 9.9 | 109 | 19.4 | 115 | 19.7 | |
| Good | 289 | 43.4 | 229 | 40.7 | 236 | 40.4 | |
| Very good | 261 | 39.2 | 117 | 31.4 | 99 | 17.0 | |
| Routine visits every | | | | | |
| 15 days | 1792 | 91.7 | 36 | 5.5 | 25 | 4.4 | 36 | 6.3 | < 0.0001 |
| 30 days | 197 | 30.1 | 84 | 14.9 | 100 | 17.5 | |
| 2–4 months | 187 | 28.6 | 199 | 35.2 | 146 | 25.4 | |
| 5–7 months | 117 | 17.9 | 140 | 24.8 | 125 | 21.8 | |
| 1 year | 117 | 17.9 | 117 | 20.7 | 166 | 29.0 | |
| Length of time at the same clinic | | | | | |
| < 6 months | 1792 | 91.7 | 158 | 23.4 | 111 | 19.8 | 110 | 19.8 | 0.01 |
| 12 months | 136 | 20.1 | 98 | 17.5 | 75 | 13.4 | |
| 18 months | 112 | 16.6 | 78 | 13.9 | 84 | 15.1 | |
| 24 months | 69 | 10.2 | 100 | 17.9 | 116 | 20.8 | |
| 30 months | 49 | 7.3 | 42 | 7.5 | 36 | 6.5 | |
| > 30 months | 151 | 22.4 | 131 | 23.4 | 136 | 24.4 | |
| Time (minutes) spent in the waiting room | | | | | |
| < 15' | 1856 | 95.0 | 194 | 28.5 | 113 | 19.6 | 138 | 23.0 | < 0.0001 |
| 15–30' | 316 | 46.5 | 249 | 43.2 | 184 | 30.7 | |
| 35–60' | 139 | 20.4 | 114 | 19.8 | 153 | 25.5 | |
| > 60 | 31 | 4.6 | 100 | 17.4 | 125 | 20.8 | |
| Quality of the time spent in the waiting room | | | | | |
| Unacceptable | 1834 | 93.9 | 28 | 4.2 | 68 | 12.0 | 119 | 20.1 | < 0.0001 |
| Poor | 84 | 12.4 | 120 | 21.2 | 128 | 21.7 | |
| Good | 439 | 64.8 | 271 | 47.9 | 290 | 49.1 | |
| Very good | 126 | 18.6 | 107 | 18.9 | 54 | 9.1 | |
| Confidentiality and privacy of the clinic personnel | | | | | |
| Poor | 1873 | 95.9 | 34 | 4.9 | 101 | 17.2 | 149 | 25.0 | < 0.0001 |
| Good | 293 | 42.5 | 236 | 40.1 | 259 | 43.5 | |
| Very good | 362 | 52.6 | 251 | 42.7 | 188 | 31.5 | |
| Helpfulness and courtesy of the clinic personnel | | | | | |
| Excellent | 1868 | 95.4 | 326 | 47.0 | 261 | 44.8 | 177 | 29.9 | < 0.0001 |
| Good | 306 | 44.1 | 194 | 33.3 | 196 | 33.2 | |
| Sufficient | 49 | 7.1 | 103 | 17.7 | 126 | 21.3 | |
| Poor | 13 | 1.8 | 25 | 4.2 | 92 | 15.6 | |
| Overall level of services offered by the public health system | | | | | |
| Unsatisfactory | 1831 | 93.7 | 36 | 5.2 | 105 | 18.4 | 165 | 28.8 | < 0.0001 |
| Satisfactory | 334 | 48.6 | 259 | 45.4 | 267 | 46.5 | |
| Very good | 317 | 46.2 | 306 | 56.2 | 142 | 24.7 | |
Although it was difficult to establish minimum standards owing to a lack of recent studies on a national level, a demand nevertheless emerged for improvements in patient reception in public services. This demand focussed on overcoming architectonic barriers and reducing time the patient spent in the waiting room especially in South Italy. It also emerged that patients in the North were more satisfied with the relationship with health staff as shown by the patient's positive impression about the confidentiality, privacy, helpfulness and courtesy of the health staff. This positive aspect was also confirmed by the fact that the general practitioner and the dermatologist in particular were considered the best source of information about their disease by the patients. Previous studies showed that a good doctor-patient relationship is the most important factor in determining patient's satisfaction [20-22]. Continuous improvements in the doctor-patient relationship is an important aim as it leads to better therapeutic compliance; in fact doctors can learn to change their style of communication as other studies have previously shown [23,24].

Interestingly, patients relied significantly on no-profit A.D.I.PSO association for inquiry about their disease. Such information were indeed considered more helpful than those provided by campaigns promoted by the public health system.

**Conclusion**

In conclusions, the results of our study showed that there is a good basis, such as the patient-doctor relationship for initiatives aimed at improving the outcome of some of the indicators used in this study.

| Table 5: Patients' knowledge about psoriasis and information need distributed in the 3 Italian areas
| --- |
| Item | Total responders | North | Centre | South | p |
| --- | --- | --- | --- | --- | --- |
| **Patient's opinion of doctor's explanation of the health problem** |  |  |  |  |  |
| Positive | 1875 | 528 | 364 | 330 | 5.4 < 0.0001 |
| Negative | 59 | 97 | 114 | 19.1 |
| Don't know | 105 | 126 | 152 | 25.5 |
| **Patient's view of the best information source on disease treatment** |  |  |  |  |  |
| Dermatologist | 1870 | 434 | 333 | 292 | 49.0 < 0.0001 |
| General practitioner | 162 | 60 | 137 | 23.0 |
| Patient association | 30 | 132 | 66 | 11.1 |
| Other | 61 | 62 | 101 | 16.9 |
| **Patient's view as to whether patients require more information concerning therapy** |  |  |  |  |  |
| Yes | 1884 | 607 | 575 | 482 | 80.5 < 0.0001 |
| No | 82 | 21 | 3.5 | 17 | 19.5 |
| **Patient's opinion of the best information source on psoriasis** |  |  |  |  |  |
| General practitioner | 1842 | 148 | 113 | 121 | 20.0 < 0.0001 |
| Pharmacist | 21 | 6 | 44 | 7.3 |
| Dermatologist | 265 | 207 | 197 | 32.6 |
| Illustrated medication leaflet | 7 | 1.2 | 19 | 3.2 |
| Health personnel | 49 | 42 | 39 | 6.5 |
| Friends and family | 13 | 5 | 16 | 2.6 |
| Health magazines | 30 | 29 | 33 | 5.5 |
| Books | 6 | 1 | 6 | 1.0 |
| Internet | 25 | 8 | 42 | 7.0 |
| Newspapers | 7 | 11 | 11 | 1.8 |
| Information campaigns | 42 | 34 | 20 | 3.3 |
| Patient associations | 19 | 95 | 34 | 5.6 |
| Other | 11 | 4 | 22 | 3.6 |
| **Knowledge of patients' rights** |  |  |  |  |  |
| Yes | 1726 | 154 | 178 | 178 | 32.0 0.06 |
| No | 438 | 400 | 378 | 68.0 |
| **Knowledge of homeopathic medication and herb-based products** |  |  |  |  |  |
| Yes | 1855 | 124 | 123 | 187 | 30.7 < 0.0001 |
| No | 526 | 473 | 422 | 69.3 |
| **Knowledge of therapies such as acupuncture, the use of phototherapy** |  |  |  |  |  |
| Yes | 1848 | 159 | 150 | 195 | 32.0 0.005 |
| No | 489 | 441 | 414 | 68.0 |
Competing interests
The author(s) declare that they have no competing interest.

Authors' contributions
EA, the principal investigator, designed the study, performed statistical analyses, interpreted the data, and wrote the article. MM participated in the development of the questionnaire and the data collection. RP participated to statistical analysis and literature search. CM created database and archived data. KP participated in the development of the questionnaire and clinical interpretation of data and critically revised the manuscript. AG participated in the development of the questionnaire and in the pilot study and data collection. SC participated to test the questionnaire in the pilot study and data collection.

All authors read and approved the final manuscript.

Acknowledgements
The Authors would like to thank Maurizio Marvalle (Faculty of Economics of the University of L’Aquila) for the advises on the statistical interpretation of results and the following dermatologists for their participation in the study:

Gianfranco Altomare (Milano)
Fabio Arcangeli (Cesena)
Mario Aricò (Palermo)
Giuseppe Arzenziano (Napoli)
Pier Giacomo Calzavara Pinton (Brescia)
Ugo Bottoni (Catanzaro)
Giuliano Brandozzi (Ascoli Piceno)
Francesco Cusano (Benevento)
Santo Dattola (Reggio Calabria)
Antonia Galluccio (Benevento)
Gianpietro Girolomoni (Verona)
Giovanni Lo Scocco (Prato)
Torell Lotti (Firenze)
Patrizia Martini (Lucca)
Giuseppe Micali (Catania)
Iria Neri (Bologna)
Andrea Peserico (Padova)
Pietro Santoianni (Napoli)

Gino Antonio Vena (Bari)

References
1. Johnson M-LT, Roberts J: Skin conditions and related need for medical care among persons aged 1–74 years. Hyattsville, US Department of Health Education and Welfare 1978.
2. Naldi L: Inflammatory skin diseases IV: psoriasis. In The Challenge of Dermatology-Epidemiology Edited by: Williams HC, Strachan D. Boca Raton, FL: CRC Press; 1997:157-190.
3. Stern RS: The epidemiology of joint complaints in patients with psoriasis. J Rheumatol 1985, 12:315-320.
4. Scarp R, Oriente P, Pucino A, Torella M, Pignone L, Riccio A, Biondi Oriente C: Psoriatic arthritis in psoriatic patients. Br J Rheumatol 1994, 33:246-250.
5. Salvarani C, Lo Scocco G, Macchioni P, Cremosoni T, Rossi F, Mantovani W, Battistel B, Bisgighini G, Portioli I: Prevalence of Psoriatic Arthritis in Italian Psoriatic Patients. J Rheumatol 1995, 22:1499-1503.
6. Gupta MA, Gupta AK: Depression and suicidal ideation in dermatology patients with acne, alopecia areata, atopic dermatitis and psoriasis. Br J Dermatol 1998, 139:846-850.
7. Krueger G, Koo J, Lebow M, Lebow M, Menter A, Stern RS, Rolstad T: The impact of psoriasis on quality life: results of a 1998 National Psoriasis Foundation patients-membership survey. Arch Dermatol 2001, 137:280-284.
8. Lindgard B: Diseases Associated with psoriasis in a General Population of 159200 Middle-Aged, Urban, Native Swedes. Dermatology 1986, 172:298-304.
9. Henseler T, Christophers E: Disease concomitance in psoriasis. J Am Acad Dermatol 1995, 32:982-986.
10. Christophers E: Psoriasis – epidemiology and clinical spectrum. Clin Exp Dermatol 2001, 26:314-320.
11. NC: SAS Institute Inc: SAS/STAT User’s Guide, Version 6 fourth edition. Cary, USA; 1989.
12. Naldi L, Parazzini F, Brevi A, Peserico A, Veller Fornaia C, Grosso G, Rossi E, Marinaro E, Polenghi MM, Finzi A, Galiabisi G, Recchia G, Cristofolino M, Schena D, Cailleti T: Family history, smoking habits, alcohol consumption and risk of psoriasis. Br J Dermatol 1992, 127:212-217.
13. Chaput JC, Poynard T, Naveau S, Penso D, Durrmeyer O, Supplisson D: Psoriasis, alcohol and liver disease. Br Med J 1985, 291:215.
14. Monk BE, Neill SM: Alcohol consumption and psoriasis. Dermatologico 1986, 173:57-60.
15. Poikolainen K, Reunala T, Karvonen J, Lahuartaa J, Karkkainen P: Alcohol intake: a risk factor for psoriasis in young and middle aged men. Br Med J 1990, 300:780-783.
16. Sage-Peterson K, Winchester R: Edited by: Freedberg IM, Elsen AZ, Wolff K, ed al. New York: McGraw-Hill; 1999:522-533.
17. Coaccioli S, Di Cato L, Bruni PL, Papini M, Puxeddu A: A proposal of questionnaire for evaluation of the quality of life in patients with psoriatic arthritis. Recent Prog Med 2003, 94(9):380-386.
18. Simons RD: Additional studies on psoriasis in the tropics and starvation camps. J Invest Dermatol 1949, 12:285-294.
19. Harrobin DF: Low prevalence of coronary heart disease/CHD), psoriasis, asthma and rheumatoid arthritis in eskimonos: are they caused by high dietary intake of eicosapentaenoic acid (EPA), a genetic variation of essential fatty acid (EFA) metabolism or a combination of both? Med Hypotheses 1987, 22:421-428.
20. Renzi C, Abeni A, Picardi A, Agostini E, Melchi E, Pasquini P, Puddu P, Braga M: Factors associated with patient satisfaction with care among dermatological outpatients. Br J Dermatol 2001, 45:617-623.
21. Jefferson Medical College. In Profiles of care Philadelphia: Cancer Research in Medical Education and Health Care; 1998.
22. Harris LE, Swindle RW, Mungai SM, Weinberger M, Tierney WM: Measuring patient satisfaction for quality improvement. Med Care 1999, 37:1207-1213.
23. Platt FW, Keller VF: Emphatic communication: a teachable and learnable skill. J Gen Intern Med 1994, 9:222-226.
24. Roter DL, Hall JA, Kern DE, Barker LR, Cole KA, Roca RP: Improving physicians’ interviewing skills and reducing emotional distress: a randomized clinical trial. Arch Intern Med 1995, 155:1877-1884.

Pre-publication history
The pre-publication history for this paper can be accessed here:
http://www.biomedcentral.com/1471-2458/7/59/prepub