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Posted Date: 10 July 2025

doi: 10.20944/preprints2025070931.v1

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Article

Using Conjoint Analysis to Elicit Benefit-Risk Preferences for Different Treatment Options Among Psoriasis Patients Receiving Systemic Treatment

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Abstract

Background: Psoriasis has a huge impact on patient's life. Treatment dissatisfaction and non-adherence are common among patients with psoriasis, partly due to discordance between individual preferences and recommended treatments. The modern strategy for psoriasis should be focused on human centric treatment that recognizes the needs and preferences of patients with a goal for safe, effective, quality, and acceptable health services for a lifetime. The aim of this analysis was to capture patients' preferences with moderate-to-severe psoriasis regarding various treatment attributes. **Methods:** Development of a specialized questionnaire containing four attributes with three levels each was used, followed by an orthogonal plan based on conjoint analysis. Nine combinations of therapeutic scenarios were produced as a result, to investigate participants' preferences. Respondents were asked to rank alternatives from best to worst. **Results:** The risk of developing pneumonia or other serious infection within a decade, seems to affect more the overall preference of patients with an implied assigned value of 37. The second attribute was the type and frequency of the administration with a value of 27 followed by the treatment effectiveness with great improvement of body surface with a value of 25. The lowest utility (11) was sustainability of long-term remission of psoriasis. **Conclusions:** Psoriasis patients want safe, effective, and easy to administer treatments.

Keywords: psoriasis; patients; plaque; treatment; preferences; conjoint analysis

1. Introduction

Inflammation is not limited to psoriatic skin and affects different organ systems of the body. Thus, psoriasis is a systemic entity rather than a solely dermatological disease and can also be associated with other diseases and health conditions [1]. Rheumatoid arthritis and idiopathic inflammatory bowel diseases are associated with increased impact on psoriatic patients [2]. Metabolic diseases and syndromes such as central obesity (22-37%), hypertension (up to 44% of psoriatic patients), dyslipidemia (up to 50%) and type II diabetes (up to 37%), which can lead to myocardial infarction and stroke, occur more frequently in psoriasis patients [2].

The psoriasis effect on patients' quality of life (QoL) has been extensively studied and is similar to other chronic and high burden diseases. Physical and mental function is decreased in psoriasis patients, comparable to that observed in cancer, arthritis, cardiovascular diseases, hypertension and

diabetes [3]. In addition, the negative impact on patients' QoL can lead to stigmatization, poor self-esteem, increased stress, depression, disruption of work and lost productivity [4–6].

According to European Consensus, definition of psoriasis severity is crucial for the decision and the cost of the applied treatment. The rule of "10" has been proposed for the definition of moderate-to-severe psoriasis, setting BSA>10, PASI>10 and DLQI>10. So according to guidelines, a moderate or severe psoriasis requires systemic treatment, while a mild psoriasis with BSA≤10, PASI≤10 and DLQI≤10 is mostly treated with topicals [7]. However, the degree of impact on patients' QoL was able to define psoriasis as moderate-to-severe and to justify systemic treatment [7], although most patients, approximately 70-80%, suffer from mild-to-moderate disease [8].

Treatment dissatisfaction and lack of compliance with medical instructions is common among psoriasis patients, in part due to the mismatch between patients' expectations and the treatments applied. On the contrary, patients with high appreciation and confidence in their treatment are expected to show greater compliance and experience lower burden from their illness [9].

The alignment between clinicians and patients on assessing disease severity and treatments pathways, taking into consideration at the same time the high need for safe psoriasis therapies is always significant [10].

Research data on psoriasis patients' preferences in Greece are limited, with treatment decisions being made solely by the clinician, based on the applicable guidelines. The present study aimed to investigate and evaluate the preferences of patients diagnosed with moderate-to-severe psoriasis regarding the various alternative psoriasis treatments.

2. Materials and Methods

Study Participants

Moderate-to-severe psoriasis patients who visited the outpatient clinics of the Department of Dermatological and Venereal Diseases of the University Hospital of Ioannina for a 3-month period were included. Inclusion criteria were: age ≥18 years, knowledge of Greek language and satisfactory mental, physical and psychological state ensuring the ability to answer the questionnaire. The psoriasis diagnosis was based on the characteristic clinical picture and laboratory confirmation of the disease by skin biopsy. Participating patients received some of the available systemic psoriasis treatments such as methotrexate, acitretin, cyclosporine or biological agents.

The study protocol was approved by the institutional scientific review board. All subjects provided written informed consent before study entry.

Survey Development

Psoriasis severity was assessed with Psoriasis Area and Severity Index (PASI) by physician during outpatient examination [11]. Patients were also requested to complete a closed-ended questionnaire structured in 4 sections incorporated the following:

1. Demographic, social and clinical characteristics.
2. Dermatology Life Quality Index (DLQI) assessing QoL for patients with skin diseases [12].
3. EQ-5D-3L questionnaire with visual analog scale (VAS) [13].
4. Questions regarding therapeutic preferences of patients.

The questionnaire measuring the patients' therapeutic preferences contained four attributes [Body Surface Area (BSA) improvement, treatment characteristics (route of administration, type and frequency), response to treatment and remission maintenance, adverse reactions] with three levels each, which were regarded as important based on international literature [9,14,15]. The three levels which were used in each characteristic included:

1. BSA improvement:
 - A. 2 handprint areas
 - B. 8 handprint areas

- C. 16 handprint areas
- 2. Route of administration, type and frequency:
 - A. 2 pills per day
 - B. 1 intravenous infusion every 2 months
 - C. 1 subcutaneous injection every 3 months
- 3. Response to treatment, maintaining >50% of remission:
 - A. 4 weeks
 - B. 10 weeks
 - C. 16 weeks
- 4. 10 years risk to develop pneumonia or other infection related to treatment:
 - A. 0%
 - B. 15%
 - C. 40%

Conjoint analysis is basically a decomposition method based on the principle that each good or service can be described by its attributes and that indirect values given for each feature or intervention are derived from a total score for a profile consisting of two or more features [16]. It has played a significant role in predicting and understanding individuals' behavior regarding decision making and consumer choices related to health services [17].

The conjoint analysis involved (1) identification of key attributes associated with psoriasis treatments range, (2) assignment of various levels to identified treatment attributes, (3) creation of hypothetical treatment scenarios by combining these levels in a random fashion using an orthogonal design to maximize discrimination of relative importance of attributes while minimizing the number of choice tasks needed, (4) presentation of choice sets to respondents and (5) measurement of preferences for the treatment attributes based on choices made for the presented scenarios [18].

The orthogonal plan for the conjoint analysis provided nine therapeutic scenarios, each being based on a different attribute levels combination and describing a different psoriasis treatment profile. The profiles created are given below:

1. 8 handprint areas, 1 intravenous infusion every 2 months, 16 weeks, risk of infection (IR) 0%.
2. 16 handprint areas, 1 intravenous infusion every 2 months, 4 weeks, IR 40%.
3. 16 handprint areas, 2 pills per day, 16 weeks, IR 15%.
4. 2 handprint areas, 2 pills per day, 4 weeks, IR 0%.
5. 2 handprint areas, 1 subcutaneous injection every 3 months, 16 weeks, IR 40%.
6. 16 handprint areas, 1 subcutaneous injection every 3 months, 10 weeks, IR 0%.
7. 8 handprint areas, 2 pills per day, 10 weeks, IR 40%.
8. 8 handprint areas, 1 subcutaneous injection every 3 months, 4 weeks, IR 15%.
9. 2 handprint areas, 1 intravenous infusion every 2 months, 10 weeks, IR 0%.

Participants were asked to rank them all from most preferable (1) to less preferable (9), assuming that these were the available therapeutic options for their disease.

Statistical Analysis

Descriptive statistical analysis was performed for all study data [demographic and clinical characteristics, Dermatology Life Quality Index (DLQI), EQ-5D utility, VAS scale, and PASI score]. Conjoint analysis was based on the assumption that the highest utility values attributed by participants to one feature, correspond to greater preference for the specific feature. Since individual utilities are expressed in common units they can be added to obtain overall utility of any one combination therapy. Utility is the net benefit an individual would derive from a treatment option, assumed to be based on the option's attribute levels and the sum of their associated "part-worth" utilities [18].

The total value for each of the four treatment attributes (efficacy, administration, response to treatment and IR) indicates the Importance Score (IS) of each attribute in the overall preference of the participating patients. The points of importance are in fact percentages adding up to 100. In the numerator we have each attribute range of utilities, while in the denominator we sum up all attributes range of utilities. Attributes with higher utility values play a more important role in patients' preferences than those with lower utility values [18].

In conjoint analysis we hypothesized there was a linear relation between efficacy, response to treatment and IR. More specifically, we hypothesized treatments with better efficacy and response characteristics would be preferable and therefore present with higher utility values, while the increased IR corresponds to lower utility and therefore preference (Table 1). The above analysis was carried out with IBM SPSS Statistics 21 and IBM SPSS Conjoint 26.

Table 1. Description of conjoint analysis.

	N of Levels	Relation to Ranks or Scores
Effectiveness	3	Linear (more)
Type of administration	3	Discrete
Response to treatment	3	Linear (more)
Risk of infection / adverse reaction	3	Linear (less)
All Factors Are Orthogonal		

3. Results

Demographic and Patients' Clinical Characteristics

During the study period, 75 moderate-to-severe psoriasis outpatients completed the survey with mean age 56 years. Forty-five percent of psoriasis patients had been diagnosed for less than 10 years, 28% between 10-20 years and 27% had a long course of more than 20 years. Twenty-seven patients suffered from psoriatic arthritis (36%), 28 from hypertension (37%), 9 were diagnosed with coronary heart disease (12%), 14 had established diabetes (19%) and 33 had elevated blood cholesterol (44%). Regarding smoking, the sample was cut in half with 38 smokers and 37 non-smokers.

Mean and median PASI score were 11 and 8.1 respectively, with the respective figures for DLQI scores being 5.8 and 4.0. The health self-scoring system through the integrated VAS thermometer scale (0-100) had an average value of 71, with the values ranging from 10 to 95. Evaluation of patients' health-related QoL in the EuroQol utility yielded an average of 0.72, with a standard deviation of 0.26 and a median of 0.79 (Tables 2-4).

Table 2. Demographic Characteristics.

Gender	N (%)
Male	42 (56)
Female	33 (44)
Age	Years
Mean (SD)	56 (14)
Median (min-max; IQR)	54 (22-86; 21)
Disease duration	N (%)
Less than 10 years	34 (45)

10-20 years	21 (28)
More than 20 years	20 (27)

N: Number of patients; SD: Standard deviation; IQR: Interquartile range.

Table 3. Comorbidities.

	N (%)
Psoriatic Arthritis	
Yes	27 (36)
No	48 (64)
Hypertension	
Yes	28 (37)
No	47 (63)
Coronary Heart Disease	
Yes	9 (12)
No	66 (88)
Diabetes	
Yes	14 (19)
No	61 (81)
High Cholesterol	
Yes	33 (44)
No	42 (56)

N: Number of patients.

Table 4. Baseline clinical characteristics and Quality of Life.

PASI score	
Mean (SD)	11 (10)
Median (min-max; IQR)	8.1 (0-68; 9)
DLQI score	
Mean (SD)	5.8 (6.2)
Median (min-max; IQR)	4 (0-26; 5)
VAS	
Mean (SD)	71 (17)
Median (min-max; IQR)	70 (10-95; 25)
EQ5D utility	
Mean (SD)	0.72 (0.26)
Median (min-max; IQR)	0.79 (-0.18-1; 0.19)

PASI: Psoriasis Area and Severity Index; SD: Standard deviation; IQR: Interquartile range; DLQI: Dermatology Life Quality Index; VAS: Visual analogue scale.

Patients' Preferences

The interpretation of utilities is as follows: the higher utility values correspond to greater preference for the option. Also, the higher the negative values we observe, the lower the utility and preference for the particular level of attribute. Patients preferred one subcutaneous injection every three months > two pills daily > intravenous every two months (Table A1). In addition, as expected, patients prefer greater efficacy and response to treatment and a lower risk of infection.

Since these part-worth utilities are expressed in common unit of measurement, they can be added together, plus the constant value, to obtain the total utility of any treatment combination. Based on the results, patients show their highest preference for treatment #6, characterized by non-existent IR, high efficacy, relatively modest response and at the same time easy dosing regimen and their lowest preference for treatment #5, characterized by high IR, low efficacy, maintenance of response and easy dosing regimen (Table A2). The attribute regarded as most important in our study was probability of IR (IS = 37), followed by administration route and frequency characteristics (IS = 27) and effectiveness of treatment (IS = 25). Sustainability of success (long-term remission) (IS = 11) was rated as less important (Table 5).

Table 5. Treatment attributes Importance Score values.

Risk of Adverse Reactions	37
Type and Frequency of Administration	27
Treatment Effectiveness	25
Sustainability of Long-Term Remission	11

4. Discussion

This study was designed to determine the relative value individuals diagnosed with moderate-to-severe psoriasis place on disease treatment attributes.

Concerning the utilities, the conjoint analysis results highlight those treatment attributes with the maximum utility as perceived by the patients. More specifically, the risk of developing pneumonia or other serious infection in the decade (adverse reactions) seems to affect the overall patients' preference. In fact, there is a big difference between a treatment with zero IR and a treatment with a high IR. Administration preference followed, nearby treatment efficiency with great improvement of body surface based on the BSA index. The lowest utility value is attributed to the sustainability of long-term remission and body clearance that reflects the response to applied treatment.

As a result, the most important therapeutic attribute was the risk of adverse reactions. This finding is not surprising, as the treatment safety is the attribute patients take into consideration to a great extent, and it is stated in many similar studies in the international literature. Eliasson et al. in a survey in UK showed participants preferred treatments with increased efficacy and decreased risk of adverse reactions, especially long-term ones such as melanoma and tuberculosis or other serious infections. In a former survey conducted in moderate-to-severe German psoriasis patients, Kromer et al. found treatment safety was the most important attribute, followed by efficacy [9,14,15].

However, there are also studies with divergent results. A 2011 German study concluded patients were willing to trade-off an increased risk of potential adverse reactions for better therapeutic results. An Italian study also observed patients were more interested in sustaining long-term disease remission than in the adverse reactions risk [19,20].

The least important attribute was the treatment response by ensuring long-term psoriasis remission. This is an interesting finding, given disease remission is among the dominant attributes in many studies in the international literature and it was the feature most appreciated by patients, following the risk of adverse reactions in a former Greek study. Indeed, in the 2018 "Protimisis" study, most of the patients estimated the risk of adverse reactions as the most important treatment attribute. Remission maintenance, faster onset and treatment characteristics (route of administration,

type and frequency) were assessed as well as important features. Only a small percentage of participants rated the monthly co-payment cost as the most important attribute [15].

There are some limitations in this research. The attributes and levels selected for the design of the questionnaire were evaluated as important based on international literature. There may be other attributes, such as the monthly co-payment cost, that moderate-to-severe psoriasis patients find important when choosing a treatment, which we did not include, such as biologics that are injected once monthly or once every 2 months, phototherapy also was left out as an option. Another limitation similar to the previous one was usually patients consider long-term remission, they are thinking about months to years. There was probably no preference for "long term remission" because the choices were all too close in time, 4 weeks vs 10 weeks vs 16 weeks. To best quantify the results, the number of attributes included in the survey needed to be finite. This is a constraint of the methodology. Complicated therapeutic profiles with many attributes and levels would require a different study type development [14].

Another research limitation is the absence of an open-ended question about patients' therapeutic preferences. This was considered necessary for the patients to choose among each different treatment scenario attributes and levels, rather than providing in written an ideal treatment via an answer to an open-ended question. Qualitative research could add further understanding of patient preferences in future studies.

The cognitive bias by patients known as the framing effect is another limitation. The utility which characterizes each treatment attribute, and the individual correlations of attributes and levels may affect the overall utility and preferences of patients, based on the examples given to them with positive or negative results. The patients tend to imagine and simulate during the decision-making process and choose according to the profit or loss of each scenario [9]. Finally, the patients' cultural differences could also be a reason for the divergent results.

The present survey intended to simulate decisions in clinical practice, but it does not have the clinical or emotional consequences of actual decisions. Differences can arise between stated and actual choices. The results indicate the importance of different issues for patients, but this limitation should be considered when interpreting them [14].

5. Conclusions

In conclusion, the overall aspiration of this manuscript was to validate psoriasis patient preferences regarding their treatments, with the use of conjoint analysis as our preferred method. The psoriasis patients choose safe, effective treatments and easy dosing regimens. Recognizing patients' needs and preferences is considered fundamental for the treatment adherence.

Author Contributions: Conceptualization, A.T. and V.A.; methodology, V.A.; software, A.T.; validation, V.A. formal analysis, A.T., E.T.; investigation, A.T., C.M. and E.T.; resources, A.T., E.T. and C.M.; data curation, A.T., C.M., E.T. and K.S.; writing—original draft preparation, A.T. and K.S.; writing—review and editing, K.S.; visualization, A.T. and K.S.; supervision, A.T. and V.A.; project administration, K.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of General Hospital of Serres.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

PASI	Psoriasis Area and Severity Index
SD	Standard deviation
IQR	Interquartile range
DLQI	Dermatology Life Quality Index
VAS	Visual analogue scale

Appendix A

Table A1. Utilities for each level of each treatment attribute.

		Utility Estimate	Std. Error
Type of administration	2 pills per day	0.36	0.22
	1 intravenous infusion every 2 months	-0.85	0.22
	1 subcutaneous injection every 3 months	0.48	0.22
Effectiveness	2 handprint areas	0.29	0.055
	8 handprint areas	1.2	0.22
	16 handprint areas	2.3	0.44
Response to treatment	4 weeks	0.10	0.13
	10 weeks	0.25	0.32
	16 weeks	0.40	0.52
Risk of infection	0%	0.000	0.000
	15%	-1.2	0.14
	40%	-3.1	0.38
(Constant)		4.9	0.47

Appendix B

Table A2. Total utility of any treatment combination for psoriasis.

Therapeutic scenarios	Part-worth utilities	Total utility of treatment
1	8 handprint areas, 1 intravenous infusion every 2 months, 16 weeks, IR 0%	5.6
2	16 handprint areas, 1 intravenous infusion every 2 months, 4 weeks, IR 40%	3.4
3	16 handprint areas, 2 pills per day, 16 weeks, IR 15%	6.8
4	2 handprint areas, 2 pills per day, 4 weeks, IR 0%	5.6
5	2 handprint areas, 1 subcutaneous injection every 3 months, 16 weeks, IR 40%	3.0
6	16 handprint areas, 1 subcutaneous injection every 3 months, 10 weeks, IR 0%	8.0
7	8 handprint areas, 2 pills per day, 10 weeks, IR 40%	3.6
8	8 handprint areas, 1 subcutaneous injection every 3 months, 4 weeks, IR 15%	5.5
9	2 handprint areas, 1 intravenous infusion every 2 months, 10 weeks, IR 0%	3.6

IR: Risk of infection.

References

1. Rendon A, Schakel K. Psoriasis Pathogenesis and Treatment. *Int J Mol Sci.* 2019;**20**(6):1475.
2. Vergou TH, Papoutsaki M, Antoniou CH. Psoriasis: A Disease with Multiple Implications to the Quality of Life of Patients and the Health System. *Hellenic Dermato-Venereological Review.* 2014;**25**(1):27-31(printed edition).
3. Rapp SR, Feldman SR, Exum M, Fleischer AB Jr, Reboussin DM. Psoriasis causes as much disability as other major medical diseases. *J Am Acad Dermatol.* 1999;**41**(3 Pt 1):401-407.
4. Dubertret L, Mrowietz U, Ranki A, et al. European patient perspectives on the impact of psoriasis: the EUOPSO patient membership survey. *Br J Dermatol.* 2006;**155**(4):729-736.
5. Papp K, Gulliver W, Lynde C, Poulin Y, Ashkenas J. Canadian Psoriasis Guidelines Committee. Canadian guidelines for the management of plaque psoriasis: overview. *J Cutan Med Surg.* 2011;**15**(4):210-219.
6. Ayala F, Sampogna F, Romano GV, et al. The impact of psoriasis on work-related problems: a multicenter cross-sectional survey. *J Eur Acad Dermatol Venereol.* 2014;**28**(12):1623-1632.
7. Mrowietz U, Kragballe K, Reich K, et al. Definition of treatment goals for moderate to severe psoriasis: a European consensus. *Arch Dermatol Res.* 2011;**303**(1):1-10.
8. Boehncke WH, Schön MP. Psoriasis. *Lancet.* 2015;386(9997):983-994.
9. Kromer C, Schaarschmidt ML, Schmieder A, Herr R, Goerdts S, Peitsch WK. Patient Preferences for Treatment of Psoriasis with Biologicals: A Discrete Choice Experiment. *PLoS One.* 2015;**10**(6):e0129120.
10. van de Kerkhof PC, Reich K, Kavanaugh A, et al. Physician perspectives in the management of psoriasis and psoriatic arthritis: results from the population-based Multinational Assessment of Psoriasis and Psoriatic Arthritis survey. *J Eur Acad Dermatol Venereol.* 2015;**29**(10):2002-2010.
11. Fredriksson T, Pettersson U. Severe psoriasis--oral therapy with a new retinoid. *Dermatologica.* 1978;**157**(4):238-244.
12. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)--a simple practical measure for routine clinical use. *Clin Exp Dermatol.* 1994;**19**(3): 210-216.
13. Euroqol Group. The EQ-5D instrument. <https://euroqol.org/eq-5d-instruments/eq-5d-3l-available-modes-of-administration/self-complete-on-paper/>
14. Eliasson L, Bewley AP, Mughal F, et al. Evaluation of psoriasis patients' attitudes toward benefit-risk and therapeutic trade-offs in their choice of treatments. *Patient Prefer Adherence.* 2017;**11**:353-362.
15. Rigopoulos D, Ioannides D, Chaidemenos G, et al. Patient preference study for different characteristics of systemic psoriasis treatments (Protimisis). *Dermatol Ther.* 2018;**31**(3):e12592.
16. Bridges JFP, Hauber AB, Marshall Det al. Conjoint Analysis applications in health--a checklist: a report of the ISPOR Good Research Practices for Conjoint Analysis Task Force. *Value Health.* 2011;**14**(4):403-413.
17. Kjær T. *A review of the discrete choice experiment - with emphasis on its application in health care.* Syddansk Universitet, 2005. (Health Economics Papers; No. 1).
18. Ryan M, Farrar S. Using conjoint analysis to elicit preferences for health care. *BMJ.* 2000;**320**(7248):1530-1533.
19. Schaarschmidt ML, Schmieder A, Umar N, et al Patient preferences for psoriasis treatments: process characteristics can outweigh outcome attributes. *Arch Dermatol.* 2011;**147**(11):1285-1294.
20. Torbica A, Fattore G, Ayala F. Eliciting preferences to inform patient-centred policies: the case of psoriasis. *Pharmacoeconomics.* 2014;**32**(2):209-223.

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