Primary care and pattern of skin diseases in a mediterranean island

Emmanouil K Symvoulakis¹, Konstantin Krasagakis*², Ioannis D Komninos¹, Ioannis Kastrinakis¹, Ioannis Lyronis¹, Anastasios Philalithis¹ and Androniki D Tosca²

Address: ¹Department of Social Medicine, Faculty of Medicine, University of Crete, Greece and ²Department of Dermatology, University General Hospital of Heraklion, Crete, Greece

Email: Emmanouil K Symvoulakis - symvouman@yahoo.com; Konstantin Krasagakis* - krasagak@med.uoc.gr; Ioannis D Komninos - yiankom@hotmail.com; Ioannis Kastrinakis - rollen@in.gr; Ioannis Lyronis - lyronis@med.uoc.gr; Anastasios Philalithis - tassos@med.uoc.gr; Androniki D Tosca - derma@med.uoc.gr

* Corresponding author

Abstract

Background: In Greece where primary health care services are not fully developed, patients with simple or minor conditions have to attend to hospitals to be treated. We analysed the data of patients with cutaneous disorders attending the tertiary referral hospital on the Island of Crete, with the aim to identify the most common conditions that patients complain of, in order to define the areas where the education of General Practitioners in Dermatology must focus.

Methods: All patients attending the Dermatology ambulatory office in the Emergency Department of the University General Hospital of Heraklion from January 2003 to December 2003 were included in this retrospective analysis. The medical records of the patients (history, physical examination and laboratory investigations) were analysed to ascertain the diagnosis and the management of cases. All patients were evaluated by qualified dermatologists.

Results: A total of 3715 patients attended the Dermatology Clinic. Most patients were young adults in the age group 21–40 years (38.4%), and the male to female ratio was 1 to 1.2. Allergic skin diseases, mostly dermatitis and urticaaria (35.7%) were the most common for attendance, followed by infectious diseases (26.1%) and insect bites (10.2%). Inflammatory and autoimmune disorders accounted for 7.9% of the cases. Pruritus of unknown origin was diagnosed in 6.3% of patients. Skin tumors were detected in 2.7%. The management of the vast majority of cases (85.0%) consisted of advice with or without a prescription, while only 4.8% of patients required admission.

Conclusion: Allergic and infectious skin diseases were the most common cutaneous diseases in patients attending this tertiary University hospital, while the management of most patients did not require specialised care. On the basis of the present data, the training of primary health care providers in Dermatology should emphasize these common conditions, with the aim of improving primary care and alleviating the burden on hospital care.
Background
During the last three decades, dramatic changes have occurred in health care provision in western countries. Managed care plans attempt to reduce costs by encouraging primary health care providers to handle a greater and wider range of conditions [1]. In the U.S.A., approximately 6% of outpatient visits are for dermatological diseases and non-dermatologists treat a high percentage of these patients [2,3]. In Greece, primary health services are still not fully developed, in particular in cities, where there is a lack of General Practitioners. In Crete, there are very few Dermatologists working as private practitioners in order to provide care to patients who would refer, self-pay, themselves directly to a specialist. Therefore, most patients with any type of skin disorder attend the Dermatology ambulatory office in the Emergency Department of the University General Hospital in order to be diagnosed and treated. The aim of this study is to determine the type (diagnosis and classification) of skin disorders that patients present with and to ascertain how they are managed. It is hoped that this approach may help to improve the education of primary health care providers [4] by focusing on diagnosis and treatment of the most common of cutaneous diseases.

Methods
All patients seen at the Dermatology ambulatory office in the Emergency Department of the University General Hospital of Heraklion from January 2003 to December 2003 were included in this retrospective analysis. From the medical records, history, physical examination and whenever necessary, laboratory investigations were analysed. All patients were evaluated by qualified dermatologists. Sex, age, clinical diagnoses and seasonal fluctuations of the most common skin problems were recorded. The management of the patients was also studied. Descriptive statistics were carried out.

Results
A total of three thousand seven hundred fifteen patients (3715) attended the Dermatology department. Thirty-eight per cent of patients were in the age group 21–40 years, and the male to female ratio was 1:1.2. Age distribution of cases is shown in Figure 1. The monthly distribution of patients analyzed by sex is shown in Figure 2. The pattern and the relative frequency of skin diseases are shown in Tables 1, 2. More than one third of the patients (35.7%) attended the hospital with a cutaneous manifestation of an allergic disorder [Table 1]. The most common were dermatitis and eczematous disorders that accounted for 18.1% (674 patients), followed by acute urticaria or exacerbations of chronic urticaria (14.1%, 524 patients).

![Age distribution of patients](image.png)

**Figure 1**
Age distribution of all patients attended the Dermatology ambulatory office in a year.
and drug eruptions (85 patients, 2.3%), whereas erythema nodosum and erythema multiforme accounted only for 0.6% each (21 and 23 patients respectively). A breakdown of dermatitis subtypes showed that contact dermatitis is the most common (32.2%, 217 of dermatitis cases), followed by atopic dermatitis (20.1%, 135 of cases). Dyshidrotic and seborrheic dermatitis were observed in 10.3% (69 cases) and 7.4% (50 cases) respectively. Unclassified dermatitis was seen in 30.0% (202 patients). Infectious diseases with cutaneous manifestations were observed in 26.1% of the patients. Bacterial infectious diseases accounted for 9.1% (337 patients), followed by viral exanthemas (7.3%, 271 patients) and fungal infections (5.5%, 203 patients), whereas viral warts, parasitic or venereal diseases accounted for less than 2% of the examined cases [Table 1].

Exacerbations of mostly chronic autoimmune and inflammatory skin disorders were the reason of the consultation in 7.9% of the patients [Table 1]. Acne accounted for 2.3% of them, psoriasis for 1.2%, connective tissue disorders for 1.4%, lichen planus for 0.6% and bullous diseases for 0.6%. Pityriasis rosea, an acute onset disease of unknown origin, was diagnosed in 1.8% of the patients. Several other causes accounted for 30.3% of outpatient visits at the emergency department [Table 1]. Insect bites – especially in summer months – were diagnosed in 10.2% of the patients, whereas pruritus of unknown origin in 6.3%. Skin tumors were seen in 2.7% of the patients and actinic

---

Table 2: Seasonal relative frequency of the most common skin disorders.

| Common skin disorders      | Spring (%) | Summer (%) | Autumn (%) | Winter (%) |
|---------------------------|------------|------------|------------|------------|
| Dermatitis                | 19.8       | 16.8       | 17.8       | 19.1       |
| Urticaria                 | 16.7       | 12.6       | 12.8       | 15.7       |
| Insect Bites              | 8.0        | 14.9       | 9.4        | 4.7        |
| Bacterial Infections      | 8.0        | 10.8       | 8.4        | 7.9        |
| Viral Exanthemas          | 7.2        | 5.2        | 9.6        | 8.6        |
| Fungal Infections         | 4.1        | 6.4        | 6.3        | 4.4        |
| Pruritus*                 | 5.0        | 4.3        | 9.3        | 7.8        |
| Others                    | 31.2       | 29.0       | 26.4       | 31.8       |
| Total                     | 100        | 100        | 100        | 100        |

* Of unknown origin

---

Figure 2
Monthly distribution of all patients attended the Dermatology ambulatory office in relation to sex.
Table 1: Distribution of cases in relation to the type of skin disorder.

| Type of skin disorder                           | Cases (n) | Percentage (%) |
|------------------------------------------------|-----------|----------------|
| **Allergic skin disorders**                     |           |                |
| Dermatitis                                      | 674       | 18.1           |
| Urticaria                                       | 524       | 14.1           |
| Drug eruptions                                  | 85        | 2.3            |
| Erythema multiforme                             | 23        | 0.6            |
| Erythema nodosum                                | 21        | 0.6            |
| **Infectious skin disorders**                   | 968       | 26.1           |
| Bacterial infections                            | 337       | 9.1            |
| Viral exanthemas                                | 271       | 7.3            |
| Fungal infections                               | 203       | 5.5            |
| Viral warts                                     | 59        | 1.6            |
| Parasitic diseases                              | 52        | 1.4            |
| Venereal diseases                               | 46        | 1.2            |
| **Inflammatory and autoimmune skin disorders**  | 294       | 7.9            |
| Acne                                            | 85        | 2.3            |
| Pityriasis rosea                                | 67        | 1.8            |
| Connective tissue diseases                      | 52        | 1.4            |
| Psoriasis                                       | 46        | 1.2            |
| Lichen Planus                                   | 22        | 0.6            |
| Bullous diseases                                | 22        | 0.6            |
| **Miscellaneous group**                         | 1126      | 30.3           |
| Insect bites                                    | 379       | 10.2           |
| Pruritus of unknown origin                      | 234       | 6.3            |
| Burns                                           | 63        | 1.7            |
| Skin tumors                                     | 100       | 2.7            |
| Actinic keratosis                               | 46        | 1.2            |
| Ulcers                                          | 26        | 0.7            |
| Pigmentary disorders                            | 33        | 0.9            |
| Alopecia                                        | 22        | 0.6            |
| Others                                          | 53        | 1.4            |
| No skin findings                                | 96        | 2.6            |
| No clinical diagnosis                           | 74        | 2.0            |
| **Total**                                       | 3715      | 100            |

Discussion

The Department of Dermatology in the University General Hospital of Heraklion is the only tertiary referral department in the island of Crete (population 600 000). In addition, there is a lack of a full-functioning primary health care provision, especially in the urban areas of the island and the number of dermatologists providing first contact care is limited. First manifestation or acute exacerbation of a chronic existing skin disease is therefore a common reason for patients to seek care at the University Hospital of Heraklion. This study was therefore conducted to describe the pattern of those dermatological diseases that could be managed by primary care physicians if they had received appropriate training.

The highest number of cases observed was dermatitis followed by acute urticaria, which are both skin diseases based on a background of immediate or delayed hypersensitivity. This observation correlates well with other studies that report allergic skin diseases as the most com-
Inflammatory and autoimmune disorders represent mostly diseases with a chronic and relapsing course. Psoriasis was the leading cause of dermatological consultation for papulosquamous diseases, seen in 1.2% of the total cases examined (46 cases). Julian reports psoriasis in a percentage of 2.6% and other studies suggest psoriasis as the chronic dermatological disorder that affects 1 to 2% of the population [8,9]. Acne is a common skin disorder that affects susceptible pilosebaceous follicles of mainly teenagers and young adults [10,11]. Acne was seen in a percentage of 2.3% of all cases in our study. The majority of acne patients had already attended a prior consultation. Acne is found worldwide and is more severe in males, with clinical evidence indicating a familial trait [12]. Psychologic and emotional stress may accompany this skin condition [13]. In 2.6% of cases no skin finding was detected during the clinical examination. A transient minimal skin lesion may explain this.

A breakdown of care management showed that 85.0% of patients required medical advice with or without prescription of drugs while only in 12.4% was hospital management necessary (Table 3). Although some of the first group might still require referral to a specialist, we believe that our results support the hypothesis that first contact care could be provided by a General Practitioner or other primary health care provider.

**Conclusion**

Primary care physicians should have the working knowledge to handle the most common skin diseases in order to facilitate the management of common dermatological diseases.
problems and to recognise those cases that require further referral. This may decrease the rate of hospital visits and reduce costs. Studies similar to ours will help confirm the most common conditions seen in dermatology and will provide the guidelines for the type of skin disorders that should be incorporated into the training program of General Practitioners [4]. Despite the fact that skin disease is often associated with less expensive diagnostic and therapeutic procedures and limited mortality, skin disorders are a leading cause of disability in the society [14]. The pattern of skin diseases is, among other parameters, an index of community development and of quality of the provided care. An effort to improve primary care and alleviate the burden on hospital care should be the target of a health policy.

**Competing interests**
The author(s) declare that they have no competing interests.

**Authors’ contributions**
EKS, AP, KK and ADT were involved with the study conception. EKS, IDK, IK and IL performed the data acquisition and interpretation. KK and EKS were involved in revising the article for important intellectual content. All authors read and approved the final manuscript.

**Acknowledgements**
The authors would like to acknowledge Mrs Maria Skoula for her help in editing the paper.

**References**
1. Federman DG, Concato J, Kirsner RS. Comparison of Dermatologic diagnoses by Primary Care Practitioners and Dermatologists. A review of the literature. *Arch Fam Med* 1999, 8(2):170-2.
2. Schappert SM. National Ambulatory Medical Care Survey: 1990 Summary. In Advance Data from Vital and Health Statistics, No. 213 Hyattsville, Md: National Center for Health Statistics; 1992.
3. Stern RS, Nelson C. The diminishing role of the dermatologist in the office-based care of cutaneous diseases. *J Am Acad Dermat* 1993, 29:773-777.
4. Fleischer AB Jr, Feldman SR, McConnell RC. The most common dermatologic problems identified by family physicians, 1990–1994. *Fam Med* 1997:648-52.
5. Dagnachew Shibeshi: Pattern of skin diseases at the University Teaching Hospital, Addis Ababa, Ethiopia. *Int J of Dermatol* 2000, 39:822-825.
6. Sochor H, Seboa T, Maru M: Pattern of skin diseases in Gondor Administrative Region. *Ethiop Med J* 1986, 24:192.
7. Shenefelt PD: Descriptive epidemiology of contact dermatitis in a university student population. *Am J Contact Dermat* 1996, 7(2):88-93.
8. Julian CG: Dermatology in general practice. *Br J of Dermat* 1999, 141:518-520.
9. Bonifati C, Carducci M, Mussi A, D' Auria L, Ameglio F: Recognition and treatment of psoriasis. Special considerations in elderly patients. *Drugs Aging* 1998, 12(1):177-190.
10. Stathakis V, Kilkenny M, Marks R: Descriptive epidemiology of acne vulgaris in the community. *Australas J Dermat* 1997, 38:115-123.
11. Chan JJ, Rohr JB. Acne vulgaris: yesterday, today and tomorrow. *Australas J Dermat* 2000, 41(Suppl):S69-S72.
12. Goulden V, Mc Geown CH, Cunliffe WJ: The familial risk of adult acne: a comparison between first-degree relatives of affected and unaffected individuals. *Br J Dermatol* 1999, 141:297-300.
13. Mallon E, Newton JN, Klassen A, Stewart-Brown SL, Ryan TJ, Finlay AY: The quality of life in acne: a comparison with general medical conditions using generic questionnaires. *Br J Dermatol* 1999, 140(4):672-676.
14. Finlay AY, Coles EC. The effect of severe psoriasis on the quality of life of 369 patients. *Br J Dermatol* 1995, 132:236-244.

**Pre-publication history**
The pre-publication history for this paper can be accessed here:

[http://www.biomedcentral.com/1471-2296/7/6/prepub](http://www.biomedcentral.com/1471-2296/7/6/prepub)