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## ORIGINAL ARTICLE

# [Translated article] What Proportion of the Spanish Dermatology Caseload Corresponds to Primarily Sexually Transmitted Infections and Other Anogenital Dermatoses? Results From the DIADERM National Random Survey<sup>☆</sup>



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Received 29 April 2021; accepted 9 May 2021

### KEYWORDS

International Classification of Diseases, Tenth Revision (ICD-10); Outpatient clinics; Services; Outpatient health; Sexually transmitted diseases; Venereology

### Abstract

**Background and objective:** Predominantly sexually transmitted infections (STIs) and infestations and other anogenital dermatoses are covered in the training of specialists in dermatology and venereology in Spain. This study aimed to analyze the proportion of the dermatology caseload these diseases account for within the public and private dermatological activity of the Spanish health system.

**Material and methods:** Observational cross-sectional study of time periods describing the diagnoses made in outpatient dermatology clinics, obtained through the anonymous DIADERM survey of a representative random sample of dermatologists. Based on diagnostic codes of the International Classification of Diseases, Tenth Revision, 36 related diagnoses were selected, and classified into 12 groups.

DOI of original article: <https://doi.org/10.1016/j.ad.2021.05.012>

<sup>☆</sup> Please cite this article as: Martín-Gorgojo A, Comunión-Artieda A, Descalzo-Gallego MÁ, Arias-Santiago S, Molina-Leyva A, Gilaberte Y, et al. ¿Cuánta carga asistencial suponen las infecciones de transmisión predominantemente sexual y otras dermatosis anogenitales en las consultas de Dermatología en España? Resultados del muestreo aleatorio nacional DIADERM. *Actas Dermosifiliogr.* 2022;113:22–29.

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<https://doi.org/10.1016/j.ad.2021.05.023>

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**Results:** Only 3.16% of diagnoses corresponded to STIs and other anogenital dermatoses. The most common diagnostic group was anogenital human papillomavirus infection, followed by molluscum contagiosum, and inflammatory anogenital dermatoses. Lesions with these diagnoses were usually the main reasons for first visits in the National Health Service. In private practice, the diagnoses usually came after referrals from other physicians.

**Conclusions:** STIs and other anogenital dermatoses account for a very small proportion of the dermatology caseload in Spain, although the inclusion of molluscum contagiosum diagnoses overestimates these conditions. The fact that no STI centers or monographic STI consultations were included in the random sample of dermatology partly explains the under-representation of these areas of the specialty. A determined effort to support and promote monographic STI centres and clinics should be made.

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## PALABRAS CLAVE

Clasificación Internacional de Enfermedades, CIE-10; Consulta externa hospitalaria; Actividad ambulatoria; Dermatología; Enfermedades de transmisión sexual; Venereología

## ¿Cuánta carga asistencial suponen las infecciones de transmisión predominantemente sexual y otras dermatosis anogenitales en las consultas de Dermatología en España? Resultados del muestreo aleatorio nacional DIADERM

### Resumen

**Introducción:** Las infecciones e infestaciones de transmisión predominantemente sexual y otras dermatosis anogenitales forman parte de la formación específica de los médicos especialistas en Dermatología y Venereología en España. El presente estudio pretende analizar la carga que suponen dichas patologías en la actividad dermatológica pública y privada del sistema de salud español.

**Material y método:** Estudio observacional de corte transversal de dos períodos de tiempo describiendo los diagnósticos realizados en consultas externas dermatológicas, obtenidos a través de la encuesta anónima DIADERM, realizada a una muestra aleatoria y representativa de dermatólogos. A partir de la codificación de diagnósticos CIE-10, se seleccionó toda la patología relacionada (36 diagnósticos codificados en los dos períodos), que se clasificó en 12 grupos.

**Resultados:** Tan solo el 3,16% de los diagnósticos globales fueron de infecciones e infestaciones de transmisión predominantemente sexual y otras dermatosis anogenitales. Los 3 grupos diagnósticos más frecuentes fueron las lesiones por virus del papiloma humano anogenital, seguido de los *molluscum contagiosum* y las dermatosis anogenitales inflamatorias. Con significación estadística, y comparando con el global de diagnósticos, los seleccionados constituyeron más habitualmente el motivo de consulta primario y, en el ámbito privado, fue más frecuente que viniesen derivados de otros especialistas.

**Conclusión:** Las infecciones e infestaciones de transmisión predominantemente sexual y otras dermatosis anogenitales tienen un peso muy limitado en la asistencia dermatológica en España, a pesar de que la inclusión del diagnóstico de *molluscum contagiosum* sobreestima estos diagnósticos. La ausencia de inclusión de centros y consultas monográficas de ITS en la muestra aleatoria contribuye a la infrarrepresentación de estas parcelas de la especialidad. Es importante hacer un esfuerzo decidido por potenciarlas con consultas y centros monográficos.

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## Introduction

The goal of the DIADERM study was to analyze the diagnoses made in the medical-surgical dermatology and venereology (MSDV) clinics of the members of the Spanish Academy of Dermatology and Venereology (*Academia Española de Dermatología y Venereología [AEDV]*) in Spain<sup>1</sup>. The study included diagnoses of sexually transmitted infections (STIs) and mucocutaneous anogenital disorders.

The incidence of STIs in Spain has continued to grow in recent decades. After the trough in incidence in 2001, with 2.04 confirmed gonococcal infections per 100 000 person-

years, the number of cases reported has increased every year, reaching 24.18 per 100 000 person-years in 2018<sup>2</sup>.

It is therefore essential to have an appropriate public health strategy to test, track, and treat cases of STI. Such a strategy requires the participation of specialists with specific training in the diagnosis and treatment of STIs. In this sense, MSDV is the only medical specialty in Spain whose name makes reference to this field of knowledge<sup>3</sup>, and, since, its earliest days, it has been closely associated with treatment of venereal diseases<sup>4</sup>. In general terms, dermatovenereologists have a clear role in the diagnosis and treatment of anogenital and mucosal skin conditions, especially vulvar diseases<sup>5</sup>.

**Table 1** Diagnostic codes selected and groups.

Diagnostic group	ICD-10 code	Coded diagnosis
Syphilis	A51.9	Secondary syphilis, NOS
	A53.9	Syphilis, NOS
	A53.9	Syphilis, NOS
Gonococcal urethritis and chlamydia	A54.01	Gonococcal urethritis
	N34.1	Nongonococcal urethritis
	N34.2	Urethritis, NOS
Genital chlamydia and gonorrhea	A54.0	Gonococcal infection of lower genitourinary tract
Genital herpes	A60.0	Genital herpes
	A60.0	Genital herpes simplex
Anogenital HPV	A63.0	Anogenital warts, NOS
	A63.01	Bowenoid papulosis
	A63.0	Condyloma acuminata
Molluscum contagiosum	B08.1	Molluscum contagiosum
Candidiasis	B37.3	Vaginal candidiasis
	B37.3	Vulvovaginal candidiasis
	B37.4	Candida balanitis
Pediculosis	B85.2	Pediculosis, NOS
Scabies	B86	Scabies
Vulvovaginitis	N76.20	Vulvitis, NOS
	N77.1*	Vaginitis in infectious diseases classified elsewhere
Balanoposthitis	N48.11	Balanoposthitis
	N48.10	Balanitis
	N51.2*	Balanitis in diseases classified elsewhere
Noninfectious anogenital disease	D23.9631	Pearly penile papules
	N90.7	Vulvar cyst
	K60.2	Anal fissure
	L29.3	Genital pruritus, NOS
	L29.0	Anal pruritus
	L90.0	Lichen sclerosus et atrophicus
	N48.12	Plasma cell balanitis
	N48.15	Irritant balanitis
	N48.13	Circinate balanitis
	N48.12	Zoon balanitis
	N90.41	Kraurosis vulvae
N94.80	Vulvodynia	

Abbreviations: ICD-10, *International Statistical Classification of Diseases, Tenth Revision*; NOS, not otherwise specified.

The care provided to persons with or at risk of STIs varies between the health systems of the Spanish autonomous communities. Centers specialized in treating STIs continue to provide care (continuing the historical role of the Spanish antivenereal league centers<sup>6</sup>), with significant participation from dermatologists, although some of these centers are currently at risk of being closed owing to lack of resources<sup>7</sup>. Similarly, some dermatology departments continue to run clinics for this subspecialty. However, in recent years, most care provided to patients with (or at risk of) STIs is through primary care and emergency departments. In this sense, while dermatologists play an active role in hospital emergency departments<sup>8</sup>, patients with STIs are not usually referred to them: the diseases account for a very low percentage of conditions managed in dermatology emergency departments (accord-

ing to previous studies, <2% in Valladolid<sup>9</sup> and <3% in Madrid<sup>10</sup>).

Based on the coded diagnoses resulting from the activity of dermatologists, we measured the demand by Spanish dermatologists for outpatient care of primarily sexually transmitted infections and infestations and other anogenital dermatoses. We also analyzed factors such as current differences in diagnoses according to geographic area and the origin and destination of the consultation according to whether the health care setting was public or private.

## Materials and Methods

We performed a cross-sectional observational study to describe the diagnoses made by dermatologists during 2 periods (January 19–21 and May 18–20, 2016). These data

**Table 2** Estimation of the frequency of selected diagnoses made throughout Spain by dermatologists in outpatient clinics.

Grouped Diagnosis	Estimated Frequency in 5 d (Working Week)	As a Percentage of the Group of Diagnoses Selected	As a Percentage of all Diagnoses
Lesions caused by anogenital HPV	1701	30.40%	0.96%
Molluscum (overall)	1546	27.62%	0.87%
Molluscum contagiosum in patients <18 years	1056	18.87%	0.59%
Molluscum contagiosum in patients >18 years	490	8.75%	0.28%
Noninfectious anogenital conditions	1467	26.22%	0.83%
Scabies	220	3.93%	0.12%
Balanoposthitis	158	2.82%	0.09%
Candidiasis	139	2.49%	0.08%
Syphilis	96	1.71%	0.05%
Gonococcal urethritis and chlamydia	95	1.70%	0.05%
Genital herpes	78	1.40%	0.04%
Vulvovaginitis	64	1.15%	0.04%
Genital chlamydia and gonorrhea	16	0.29%	0.01%
Pediculosis pubis	16	0.28%	0.01%
Subtotal of selected diagnoses (primarily sexually transmitted infections and infestations and other anogenital skin conditions)	5596	100%	3.16%
Remaining diagnoses overall	171 375		96.84%
Total	176 971		100%

Abbreviation: HPV, human papillomavirus.

were obtained via the anonymous DIADERM survey, which was administered to a random sample of dermatologists stratified by sections of the AEDV and representative of dermatologists in Spain. The methodology and characteristics of the survey (including the data collected and the method used to code the diagnoses) are detailed in the first manuscript on the project<sup>1</sup>.

The specific analysis of primarily sexually transmitted infections and infestations and other anogenital dermatoses was based on a review made by one of the authors (AMG), who examined the complete list of coded diagnoses and selected 36 conditions (Table 1). This list was used to generate 12 diagnostic groups.

The variables collected for the first study were included.

The statistical analysis was performed by considering the design used to collect the sample and using the *survey* module of Stata<sup>11</sup>, which considers standard errors for correlated data. Furthermore, it was not necessary to correct the fit for finite populations, given that the real number of dermatologists for each section of the AEDV was close to 1.

The study was classified as a non-postauthorization study by the Spanish Agency of Medicines and Medical Devices and approved by the Research Ethics Committee of the province of Granada (October 8, 2014).

## Results

Primarily sexually transmitted infections and infestations and other anogenital dermatoses accounted for 3.16% of the total number of diagnoses (5596 of 176 971 cases evaluated

in a working week). Table 2 shows the population-based diagnoses by group in order of frequency. The 3 most common diagnostic groups were lesions caused by anogenital human papillomavirus (HPV), followed by molluscum contagiosum (of which 68.3% corresponded to patients aged <18 years) and noninfectious anogenital conditions.

Table 3 shows the differences between the variables, taking into account the disease selected compared with the other diagnoses. The diagnoses selected were more commonly the main presenting complaint and were recorded more frequently in persons aged <18 years. This difference was statistically significant. However, this significant difference disappeared if cases of molluscum contagiosum in persons aged <18 years were excluded.

Table 4 shows the analysis of other variables. The only statistically significant differences found were for origin of the consultation in private clinics: compared with the remaining diagnoses, primarily sexually transmitted infections and infestations and other anogenital dermatoses were referred from other specialists.

## Discussion

Our study showed that primarily sexually transmitted infections and infestations account for a low percentage (3.2%) of diagnoses made by dermatologists in Spain. Overall, only 1.8% of the caseload of dermatovenereologists in Spain is accounted for by STIs per se, excluding from this percentage diagnoses of molluscum contagiosum in persons

**Table 3** Characteristics of primarily sexually transmitted infections and infestations and other anogenital dermatoses (vs other diagnoses) in Spain.<sup>a</sup>

Characteristic	Other Diagnoses (n = 171 375; 97%) No. (% of Column Total)	Primarily Sexually Transmitted Infections and Infestations and Other Anogenital Skin Siseases (n = 5596; 3%) No. (% of Column Total)	Total (n = 176 971) No. (% of Column Total)	P Value
<i>Presenting complaint</i>				.0001
Primary	136 168 (83)	4872 (91)	141 039 (83)	
Secondary	28 848 (17)	472 (9)	29 318 (17)	
<i>Diagnostic confirmation</i>				.1011
Probable	22 512 (13)	978 (18)	23 490 (14)	
Definitive	144 868 (87)	4458 (82)	149 327 (86)	
<i>Checkups</i>				.1185
Checkup	90 755 (53)	2716 (49)	93 471 (53)	
New patient	79 477 (47)	2880 (51)	82 357 (47)	
<i>System</i>				.7192
Private	52 327 (32)	1801 (33)	54 128 (32)	
Public	112 988 (68)	3716 (67)	116 704 (68)	
<i>Phase of survey</i>				.7174
January (cold)	94 921 (55)	3018 (54)	97 938 (55)	
May (warm)	76 455 (45)	2579 (46)	79 033 (45)	
<i>Pediatric (&lt;18 years)</i>				.0000
No	150 951 (89)	4319 (77)	155.270 (88)	
Yes	150 951 (88) <sup>b</sup>	4319 (95) <sup>b</sup>		(N.S.) <sup>b</sup>
	19 281 (11)	1277 (23)	20.558 (12)	
	20 337 (12) <sup>b</sup>	221 (5) <sup>b</sup>		

<sup>a</sup> The frequencies correspond to the estimated number of lesions seen in the dermatology outpatient clinic during the working week in Spain.

<sup>b</sup> Frequencies, percentages, and significance excluding patients aged <18 years with molluscum contagiosum.

aged <18 years, pediculosis not otherwise specified, and scabies (and including lesions caused by anogenital HPV, scabies, syphilis, gonococcal urethritis and chlamydia, genital herpes, gonococcal genital infections, and chlamydia). Some differences were identified with respect to importance (most often the main presenting complaint) and patient age, as well as the origin of the consultations (in the case of patients seen at private clinics).

We did not find any other studies with a similar approach. The diagnoses were selected by attempting, when possible, to include those associated with primarily sexually transmitted infections and infestations and other anogenital skin conditions.

Given that the data collected do not show the characteristics of patients with molluscum contagiosum (27.6% of the diagnoses selected), their inclusion probably overestimates the frequency of venereal disease overall and in patients aged <18 years (who accounted for 68.3% of cases of molluscum contagiosum). At the same time, however, it does not seem appropriate to exclude them, because the condition is likely to be an STI in adolescents aged <18 years. The diagnosis "pediculosis not otherwise specified" (coded separately from "pediculosis capitis") may also be affected by the same problem, as it is not specified whether the site affected is the pubic region. Notwithstanding, its weight in the whole group of selected diagnoses is very low (0.28%).

The first phase of the study also included diagnoses of lesions caused by HPV and herpes simplex affecting areas other than the anogenital region: the first group accounted for 1.20% of diagnoses overall, and the second, for 0.23%. Excluding the latter did not modify the differences between the variables studied (data not shown).

The dermatology caseload has increased in recent decades<sup>12,13</sup>. In parallel to the decrease in the incidence of STIs, dermatovenereologists clinics gradually gave less visibility to this subspecialty, albeit with a few exceptions. The data we report here show that treating STIs takes up a small part of the dermatologist's activity, indicating that most patients with or at risk of STIs are likely seen outside the dermatology clinics and departments. To a large extent, this is due to the absence of direct access for these patients to specialized care in public centers (except in the few hospitals with specialist clinics with direct access), thus leading patients to be referred to primary care and the emergency department. Similarly, in our opinion, many patients and some health care professionals generally consult for STIs and anogenital dermatoses with gynecologists and urologists because they are unaware of the specific training of dermatologists in these fields. The fact that other specialists in private health care refer a significantly larger percentage of cases to the dermatologist highlights this lack of information among the general population (who, in this care setting

**Table 4** Description of the administrative characteristics (care modality, origin, and destination) of primarily sexually transmitted infections and infestations and other anogenital dermatoses.<sup>a</sup>

Characteristic	Other Diagnoses (n = 171 375; 97%) No. (% of Column Total)	Primarily Sexually Transmitted Infections and Infestations and Other Anogenital Dermatoses (n = 5596; 3%) No. (% of Column Total)	Total (n = 176 971) No. (% of Column Total)	P Value
<i>Tele dermatology</i>				.4786
No	168 451 (99)	5564 (99)	174 016 (99)	
Yes	1781 (1)	32 (1)	1813 (1)	
<i>Origin (private health care setting)</i>				.0030
Direct	38 487 (75)	1317 (73)	39 803 (75)	
PCP	3397 (7)	153 (9)	3550 (7)	
Specialist	1363 (3)	189 (11)	1553 (3)	
Dermatologist	8233 (16)	142 (8)	8374 (16)	
<i>Destination (private health care setting)</i>				.7373
Discharge	14 675 (28)	564 (31)	15 239 (29)	
PCP	647 (1)	16 (1)	663 (1)	
Specialist	859 (2)	16 (1)	875 (2)	
Dermatologist	35 394 (69)	1205 (67)	36 599 (69)	
<i>Origin (public health care setting)</i>				.2186
Direct	11 257 (10)	553 (15)	11 809 (10)	
PCP	47 237 (42)	1461 (40)	48 698 (42)	
Specialist	6024 (5)	283 (8)	6307 (5)	
Dermatologist	47 087 (42)	1340 (37)	48 428 (42)	
<i>Destination (public health care setting)</i>				.2053
Direct	30 273 (27)	805 (23)	31 078 (27)	
PCP	7143 (6)	242 (7)	7384 (6)	
Specialist	2519 (2)	32 (1)	2551 (2)	
Dermatologist	71 147 (64)	2483 (70)	73 629 (64)	
<i>Territorial section</i>				NA
ACCL	13 888 (8)	548 (10)	14 436 (8)	
Andalusia	24 862 (15)	657 (12)	25 518 (14)	
Balearic Islands	3979 (2)	48 (1)	4028 (2)	
Canary Islands	10 804 (6)	274 (5)	11 079 (6)	
Catalonia	23 311 (14)	1241 (22)	24 553 (14)	
Center	28 048 (16)	1255 (22)	29 303 (17)	
Galicia	18 055 (11)	440 (8)	18 495 (10)	
Murcia	1473 (1)	28 (1)	1502 (1)	
VNAR	18 525 (11)	373 (7)	18 899 (11)	
Valencia	28 431 (17)	730 (13)	29 161 (16)	

Abbreviations: ACCL, Asturias-Cantabria-Castille Leon; NA, not applicable; PCP, primary care physician; VNAR, Basque Country-Navarre-Aragon.

<sup>a</sup> The frequencies correspond to the estimated number of lesions seen in the dermatology outpatient clinic during the working week in Spain.

do have direct access to a dermatologist) and the suitability of seeking alliances with colleagues in other specialties to increase awareness of dermatologists' training in this area.

Our study has a series of strengths, such as the methodology used, which is representative of the activity of dermatologists in Spain, and its sample size, which ensures the accuracy of the results reported.

Our study is limited by the fact that although the sample is highly representative of MSDV clinics in Spain, the random sample did not include dermatologists from centers special-

ized in treating STIs. Such centers are not exclusive to Spain, and there are studies showing that they diagnose a much greater percentage of STIs than a dermatology department with a specialized clinic<sup>14</sup>. In our opinion, this explains why no HIV infection or extragenital STIs were recorded. While this would lead the role of the dermatologist in the treatment of these conditions to be undervalued, we believe that the bias is not very relevant, since such centers are rare and not all their activity involves dermatologists. Another limitation is the difficulty that arises, in some diagnoses, when determining whether the disease is an STI, as in mollus-



cum contagiosum (which affected a high number of patients aged <18 years, in whom the condition is frequently not strictly an STI) and pediculosis not otherwise specified. In any case, this limitation does not modify the message of the current article, since it entails an overestimation of activity.

We believe that dermatovenereologists should lead the way in management of STIs. An example of this approach can be seen in the therapeutic algorithms proposed for anogenital verrucae<sup>15</sup>. We must make a collective effort to ensure that patients are aware of our specific training in the diagnosis and treatment of primarily sexually transmitted infections and infestations and anogenital dermatoses. In parallel, patients with or who are at risk of STIs and patients with anogenital dermatoses require streamlined care pathways. These should be direct, with as little bureaucracy as possible, and enable diagnosis, treatment, health care education, and suitable follow-up. Appropriate follow-up is essential if we are to break the epidemiological transmission chain, prevent new STIs, and ensure early detection of other infections, including HIV, whose risk clearly increases after diagnosis of certain STIs<sup>16,17</sup>.

## Conclusions

The caseload generated for dermatovenereologists by primarily sexually transmitted infections and infestations and other anogenital dermatoses is low in Spain. These diagnoses are more commonly the main reason for seeking care, and, while the direct pathway is the most common in private clinics, referral is by other specialists more frequently than in other conditions.

Venereology, primarily sexually transmitted infections and infestations, and anogenital dermatoses are areas of the specialty in which dermatovenereologists receive specific training. However, the limited presence of the dermatologist in the care of these diseases is due to factors such as the absence (and/or loss) of STI clinics and specialized centers, the lack of direct access to most of the public specialized clinics and departments in Spain, and the fact that many patients and some health professionals do not associate dermatovenereologists with STIs.

It is up to us to defend and—in some cases—reclaim the role of the dermatovenereologist in these areas of knowledge, with emphasis on the maintenance and potential restoration of specific STI clinics and centers specialized in treating STIs. To do so, the AEDV must become involved. In addition, these areas of the specialty must be strengthened to encourage multidisciplinary collaboration (with specialists in gynecology, urology, microbiology, internal medicine, and emergency department physicians) in order to achieve better care for patients with or at risk of STIs.

## Funding

The DIADERM study was promoted by *Fundaci3n Piel Sana* of the AEDV, which received financial support from Novartis. Novartis did not participate in the collection and analysis of data or in the interpretation of the study findings.

## Conflicts of interest

The authors declare that they have no conflicts of interest.

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