

Skin conditions are the commonest new reason people present to general practitioners in England and Wales

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Summary

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Background Knowledge of the prevalence and incidence of skin conditions is a prerequisite for designing clinical services and providing appropriate training for primary health care professionals. In the U.K. the general practitioner and practice nurse are the first point of medical contact for persons with skin conditions. **Objectives** We aimed to obtain contemporary data in age-, gender- and diagnosis-specific detail on persons presenting to primary care with skin problems. Comparisons were made with similar data for other major disease groups and with similar data from other recent years.

Methods We used surveillance data collected in the Weekly Returns Service (WRS) of the Royal College of General Practitioners during 2006 and trend data for subsequent years. The WRS sentinel practices monitor all consultations by clinical diagnosis in a representative population of 950 000 in England and Wales.

Results For conditions included in chapter XII of the International Classification of Diseases Ninth Revision (ICD9), 15% of the population consulted; a further 9% presented with skin problems classified elsewhere in the ICD9, making a total of 24%. There was no evidence of increasing or decreasing trend since 2006. Skin infections were the commonest diagnostic group, while 20% of children < 12 months were diagnosed with atopic eczema. Considered collectively, the incidence of new episodes of skin disorders (including diagnoses outside chapter XII) exceeded incidences for all other major disease groupings.

Conclusions Compared with other major disease groups, skin conditions are the most frequent reason for consultation in general practice. This result emphasizes the need for appropriate education and training for all medical students and particularly for continuing education in dermatology for all primary health care professionals.

Knowledge of the prevalence and incidence of skin conditions in a defined population is key to designing appropriate clinical services. Such epidemiological information can then be linked to the health care needs of persons with specific conditions, where 'need' is defined as the ability to benefit from health care.¹ Information about the case mix by age and diagnosis of persons accessing different levels of health care is needed to ensure that the training and education of all health care providers is matched to the appropriate level of service.

Previous surveys have suggested that skin conditions are common in the U.K. Studies from the 1970s that examined patients for skin problems found that 22.5–33% of the population were affected at any one time.² A survey in 2005 of 1500 people aged 15 years and upwards found that 818 (54%) had experienced a skin condition in the previous 12 months.³

Within the U.K. National Health Service, the first point of contact for people seeking medical advice about a skin condition is a primary care health professional, usually a nurse or general practitioner (GP) at a local surgery. The main historical data sources on skin consultations in primary care in the U.K. are the General Practice Morbidity Surveys,^{4,5} which provided diagnostic information about all consultations including all skin diseases. Comparison of the prevalence data in the four national surveys shows an increase in persons consulting for skin disease over the period 1955–1992. The 1991–92 Survey⁵ found that in a 12-month period, about 15% of the population consulted a GP with a skin condition classified to chapter XII of the International Classification of Diseases Ninth Revision (ICD9): *Diseases of the skin and subcutaneous tissue*.⁶ There were only two chapters in which disease prevalence was

greater: Diseases of the respiratory system (30%) and Diseases of the nervous system and sense organs (17%).

However, the aggregation of data into the ICD9 chapters can lead to an underestimation of the magnitude of the problem. This is particularly relevant for skin disorders where many common skin problems are classified elsewhere. For example, skin neoplasms are classified in another chapter and some skin infections are captured elsewhere. It is important to include many of these additional conditions when estimating the true burden of disease in the consulting community.

Several other studies attest to the high demand for consultations on skin problems in primary care. For example, a study by Julian in 1999⁷ showed that 21% of all consultations related to skin disease. A more recent study published in 2007 by Kerr *et al.*⁸ documented skin complaints as accounting for 14% of consultations.

We aimed to quantify the burden of illness as seen in primary care attributable to skin diseases generally and to consider the implications of our findings in relation to the training needs of primary care health professionals.

Materials and methods

Data source: the Weekly Returns Service

Data collected by the Royal College of General Practitioners (RCGP) Research and Surveillance Centre (formerly RCGP Birmingham Research Unit) Weekly Returns Service (WRS) were used.⁹ The WRS collects consultation data by clinical diagnosis each week from 105 practices covering a population of 950 000 in England and Wales.¹⁰ This sample has been shown to be representative of the national population by age, gender and deprivation index.¹¹ Doctors and practice nurses enter the morbidity relating to every patient encounter on to the electronic medical record. Data are stored as diagnostic Read codes which are mapped to ICD9 for analysis. Where there is uncertainty about the diagnosis, a predominant symptom code is entered and stored as Read code within ICD9 chapter XVI: Symptoms, signs and ill-defined conditions. The data are presented by ICD9 chapter codes and by disease-specific and disease group codes. This enables comparison of activity both between disease groupings (such as respiratory and skin conditions) and between diseases within the groupings (e.g. psoriasis and eczema).

Capturing activity related to skin disease

Diagnoses recorded in the WRS are mostly made by GPs (unless diagnosis follows specialist referral). Accuracy of diagnosis varies according to the expertise of the recorder, the frequency with which a condition occurs and the specificity of the presentation. However, when considered in major diagnostic groups, aggregated data are likely to provide a good estimation of the total problem. For the purposes of this study we did not confine ourselves to disorders classified in ICD9 chapter XII but also investigated selected skin-related condi-

tions classified elsewhere including herpes zoster (ICD9 053), herpes simplex (054), viral warts (078), dermatophytoses (110), malignant melanoma (172), other malignant neoplasm of skin (173), lipoma (214), benign neoplasm of skin (216) and symptoms involving the skin (782). We use the term 'total skin conditions' when combining these conditions with those in chapter XII. The list is not exhaustive but diseases were chosen with particularly obvious skin relationship.

Capturing prevalence, episode incidence and consultation rate

For the study of disease prevalence we used a subset of 47 practices (those with suitable software) that were able to provide an annual prevalence data extract as well as the usual weekly reports. The population of 422 346 had a similar age and gender composition as the entire population of the WRS.¹² Data on episode incidence and consultations were obtained from all the WRS practices returning each week, which in 2006 was based on an average weekly population of 816 000.

In the WRS data the type of consultation, distinguishing between new episodes of illness and ongoing or follow-up consultations, is recorded with each diagnostic entry so that prevalence, episode incidence and consultation rates can all be measured. Prevalence rates in an annual period are obtained from the first record entry during the year for the specified condition, episode incidence rates from the number of new episodes, and consultation rates from the total number of consultations. One child with impetigo may have two separate episodes in the course of a year and make five consultations altogether. Annual episode and consultation rates are based on the aggregated age- and gender-specific weekly rates. A person with a continuing problem over many years (such as psoriasis) is counted in the prevalence data for that year if he/she consults, even though the problem may have been diagnosed many years previously. In this way the WRS prevalence data capture the total number of persons with active skin disease.

For some conditions persons may consult several times over many years. The consultation rate includes all consultations (new and ongoing) for each condition or group of conditions and is thus the highest among the three rates (prevalence, episode incidence and consultation). The consultation rate provides the best indication of the general practice workload and is here expressed per 10 000 population for each particular condition or group of conditions.

Results

Overall prevalence of skin conditions

Table 1 shows the prevalence per 10 000 population of common skin conditions presenting in the WRS practices during 2006. These data show that 15% of the population consulted with a condition included in chapter XII and a further 9% with conditions classified elsewhere. Age-standardized (to national census 2001) prevalence estimates for chapter XII

Table 1 Prevalence per 10 000 population of common skin conditions presenting in primary care during 2006 (Source: Royal College of General Practitioners Weekly Returns Service Annual Report)

Condition (ICD9 code)	Male and female		
	Male	Female	female
ICD9 chapter XII (680–709)	1315	1691	1505
Skin disorders non-chapter XII			
Herpes zoster (053)	34	52	43
Herpes simplex (054)	21	52	37
Viral warts (078.0 and 078.1)	150	169	160
Dermatophytoses (110)	165	131	148
Malignant melanoma (172)	3	4	4
Other malignant neoplasm of skin (173)	21	18	9
Lipoma (214)	25	21	23
Benign neoplasm of skin (216)	102	169	136
Symptoms involving the skin (782)	248	347	298
Non-chapter XII subtotal	769	963	868
Total	2084	2654	2373

conditions ranged between 14.7% and 15.6% in the years 2004–2007 with no evidence of trend (WRS annual prevalence reports¹³). By applying the total prevalence estimate for skin conditions to the national population of England and Wales of 53.7 million,¹⁴ we estimated that 12.9 million persons consulted with a skin condition in the year 2006 across England and Wales.

Episode incidence and consultation rates for skin conditions

The new episode incidence and consultation rates for the selected skin conditions in Table 2 show that for conditions included in chapter XII, there were approximately 2.0 consultations per episode of illness, and for conditions classified elsewhere, 1.7. As for the prevalence data, episode and

consultation rates were mostly higher in females. Review of annual episode incidence data reported in the WRS for years 2004–2009 showed consistency and no evidence of trend, with male rates varying between 1097 and 1149 per 10 000 and female rates between 1425 and 1487 (Annual Reports¹⁵).

Prevalence, episode incidence and consultation rates for specific common skin conditions

Further data are provided about common skin conditions in Table 3, including prevalence, episode incidence and consultation rates for the surveyed populations. Note that the prevalence data are limited to 47 practices (see above). Rates are presented in rank order of prevalence for the most frequently occurring conditions.

Table 4 provides an analysis by age and gender of the episode rates for various skin conditions selected to illustrate differences by age group (highest age-specific rates shown in bold face). It is important to recognize that these data include persons diagnosed in each of the separate diagnostic categories, giving considerable scope for overlap. For example, during a 1-year period a person may be diagnosed with atopic eczema and infected atopic eczema; similarly, a condition first diagnosed as seborrhoeic eczema may be later diagnosed as psoriasis.

The data in Tables 3 and 4 relating to episode incidence and consultation rates show that for every 100 persons on a GP registered list, there are 37 consultations for skin disease per year. For a GP with an average list size of 1700, this is equivalent to 630 consultations per year.

Within the various diagnostic categories of persons presenting with skin disorders, skin infections were the commonest. Acne, eczema and viral warts were also common, whereas the prevalence of psoriasis was relatively low. Around 20% of children in the first year of life were diagnosed with atopic eczema, a proportion higher than in any other age group. Viral warts presented most commonly in persons aged 5–14 years and acne in persons aged 15–24 years.

Table 2 Annual episode incidence and consultation rates per 10 000 population for ICD9 chapter XII and non-chapter XII skin conditions, 2006 (Source: Royal College of General Practitioners Weekly Returns Service Annual Report)

Condition	Episode incidence			Consultation rate		
	Male	Female	Male and female	Male	Female	Male and female
ICD9 chapter XII	1138	1487	1316	2245	2899	2578
Skin disorders non-chapter XII						
Herpes zoster	26	41	33	50	78	63
Herpes simplex	16	38	27	26	62	44
Viral warts	122	135	129	196	224	210
Dermatophytoses	146	118	132	233	185	209
Malignant melanoma	1	1	1	6	9	8
Other malignant neoplasm of skin	9	7	8	32	27	30
Lipoma	18	16	17	28	26	27
Benign neoplasm of skin	76	127	102	121	202	162
Symptoms involving the skin	163	240	202	285	428	357
Non-chapter XII subtotal	577	723	651	977	1241	1110
Total	1715	2210	1967	3221	4140	3688

Comparison with other disease groupings

Tables 5 and 6 show a comparison of episode incidence, consultation rate and consultation rate per episode for other ICD9 chapter groupings. The aggregated new episode incidence of total skin conditions and that for *Diseases of the respiratory system* were similar and exceed those in all other chapter groupings. The consultation rate per episode was not as great as that for chronic conditions such as in chapters covering *Diseases of the circulatory system*, *Endocrine, nutritional and metabolic diseases and immunity disorders* and *Mental disorders*, where the ratio of consultations to new episodes ranged between 4 and 9, as compared with 2 for skin conditions.

Discussion

Main findings

Our findings confirm those of previous morbidity surveys^{4,5} showing the high frequency of skin conditions presenting in general practice. The prevalence data suggest that 24%

Table 3 Prevalence, episode incidence and consultation rates for selected skin conditions per 10 000 population in 2006 (Source: Royal College of General Practitioners Weekly Returns Service Annual Report)

Condition (ICD9 code)	Prevalence	Episode incidence	Consultation rate
Skin and subcutaneous tissue infections (680–686)	397	335	593
Viral warts and molluscum contagiosum (078.0 and 078.1)	160	129	222
Herpes zoster (053)	43	33	63
Herpes simplex (054)	37	27	44
Dermatophytoses (110)	148	132	209
Total skin infections	785	656	1131
Eczema other than atopic eczema (692)	251	164	279
Atopic eczema (691)	162	110	278
Total eczema	413	274	557
Symptoms involving the skin (782)	256	202	357
Skin tumours: benign and malignant plus lipoma (172, 173, 214, 216)	172	128	227
Sebaceous gland disease – mainly acne (706)	164	125	251
Psoriasis and related disorders (696)	69	33	109
Hair/hair follicle (704)	64	53	93
Nail diseases (703)	63	49	88
Urticaria (708)	53	40	70
Chronic skin ulcer (707)	27	21	129

Table 4 Episode incidence for different skin conditions per 10 000 population by age and gender in 2006 (Source: Royal College of General Practitioners Weekly Returns Service)

Condition	Males							Females						
	< 1 year	1–4 years	5–14 years	15–24 years	25–44 years	45–64 years	75+ years	< 1 year	1–4 years	5–14 years	15–24 years	25–44 years	45–64 years	75+ years
Molluscum contagiosum	32	172	95	4	3	1	0	24	155	107	7	0	1	0
Viral warts	5	83	287	129	77	59	36	5	107	333	167	89	73	26
Dermatophytoses	93	110	114	124	139	169	167	106	79	98	118	131	124	98
Impetigo	189	303	192	55	25	12	15	195	314	182	81	34	16	14
Atopic dermatitis	1973	516	98	43	42	46	79	2036	603	117	105	75	59	70
Contact dermatitis and other types of eczema	807	475	164	102	90	108	196	737	488	189	216	168	130	174
Psoriasis and similar disorders	7	12	20	39	35	32	24	2	7	29	62	45	30	23
Sebaceous gland disorders (mainly acne)	25	12	96	378	88	51	27	10	15	168	452	166	64	36

Highest age-specific rates are shown in bold face.

Table 5 Episode incidence, consultation rates and consultation rates per episode for the ICD9 chapter disease groupings per 10 000 population in 2006 (Source: Royal College of General Practitioners Weekly Returns Service)

Chapter	Groupings	Episode incidence	Consultation rate	Consultation rate per episode
VIII	Diseases of the respiratory system	1903	2578	1.96
XIII	Diseases of the musculoskeletal system and connective tissue	1461	3325	2.28
XII	Diseases of the skin and subcutaneous tissue (see also Table 6)	1316	2579	1.96
XVI	Symptoms, signs and ill-defined conditions	1160	2387	2.06
VI	Diseases of the nervous system	1160	2187	2.06
X	Diseases of the genitourinary system	707	1566	2.22
I	Infectious and parasitic diseases	728	1165	1.60
XVII	Injury and poisoning	488	1006	2.06
IX	Diseases of the digestive system	499	1258	2.52
V	Mental disorders	447	2057	4.6
VII	Diseases of the circulatory system	338	3143	9.3
III	Endocrine, nutritional and metabolic diseases and immunity disorders	218	1711	7.85
II	Neoplasms	171	601	3.51
IV	Diseases of the blood and blood-forming organs	68	241	3.55

Table 6 Episode incidence and consultation rates for the ICD9 chapter disease groupings per 10 000 population if all skin conditions are included (Source: Royal College of General Practitioners Weekly Returns Service 2006)

	Episode incidence	Consultation rate
Chapter XII skin conditions	1316	2579
Non-chapter XII skin conditions	651	1110
Total	1967	3689

of the population of England and Wales (around 13 million people) visited their GP with skin problems in 2006. We have also shown consistency of prevalence in recent years which contrasts with equivalent data for respiratory conditions which have been reducing in frequency.^{16,17} The data on new episode incidence of total skin conditions show them as the most frequent reason for persons to consult with a new problem among the broad ICD9 chapter-based groupings. Even so, this is an underestimate, as not all potential conditions are included (e.g. scabies, pediculosis, chicken pox, virus exanthemata). Many skin conditions are acute or last only a short time, hence consultation rates per episode of disease are lower than in other chapter groupings, which are dominated by chronic conditions. The commonest diagnostic reason for consultation because of a skin condition was skin infection, and as pointed out in the 2006 RCGP WRS Annual Report, there has been no reduction in skin infections since 1994 when the WRS included all conditions in its monitoring activities.¹⁰ The remarkable consistency over time in the incidence and prevalence of skin disorders is noteworthy.

The case mix of conditions seen in primary care differs greatly from that seen in specialist dermatology units. Here, referrals from primary care are most frequent for the diagnosis

and management of skin lesions (up to 50% of all clinical activity), and patients with psoriasis represent between 5% and 11% of specialist case mix.^{18,19}

How does this relate to other studies?

Our findings confirm those of previous morbidity surveys^{4,5} concerning the high frequency of skin conditions presenting in general practice. The 1991–92 General Practice Morbidity Survey⁵ documented 15% of the population seeking advice from their GP with a skin condition classified in chapter XII of the ICD9 which is the same as we report here for 2006. However, as already explained, inclusion of conditions outside chapter XII increases the prevalence estimate to 24%. Most published studies from primary care have not been based on the ICD9 classification structure and cannot be compared precisely. Furthermore, other studies document percentage of total consultations rather than the detailed population-based rates presented in this paper. Bearing in mind this lack of comparability, it is worth mentioning two studies that have attempted to quantify GP consultations relating to skin disease. A study from south-east Scotland in 2004–2005 captured activity relating to dermatological problems presenting over a 2-week period to 13 practices comprising 93 343 patients.⁸ The GPs were asked to note all consultations pertaining to cutaneous disease. Analysis by practice showed a range of 3–19% in the percentage of consultations related to skin problems. In 1999 Julian, a GP with particular interest in skin diseases, reported 5 years' personal experience of patients consulting and found that 21% of all consultations related to skin disease.⁷

The higher rates of prevalence reported here are derived from a large sentinel surveillance programme in which all consultations are assigned a diagnosis. We have included diagnostic categories not previously included in other studies (such as viral warts, herpes simplex, dermatophytoses and all skin tumours) and have not limited analysis to ICD9 chapter XII.

In the study from southeast Scotland⁸ the case mix data, based on the proportion of all skin conditions allocated, reported the commonest reasons for dermatological consultations to be eczema (22.5%), skin infections (20.3%) and benign tumours (11.4%).⁸ The present study captures the data differently and reports skin infections as the commonest presenting problem, with eczema being less common.

Strengths and limitations of the study

1. *Data quality.* The WRS is a well established, reliable and detailed data source with a nationally representative population. Data collection includes information about the full range of skin conditions. The data are used extensively to examine seasonal variation but in this study we have analysed a 12-month dataset, thus avoiding seasonal influence. We have also considered secular trends and presented data for several recent years. In comparisons of weekly incidence data for respiratory disease and for skin conditions with data on relevant prescribing based on Prescription Pricing Authority data, a similarity of trends over time was shown, decreasing for respiratory disease and antibiotics but stable for skin conditions and antibiotics.^{16,17} These comparisons provide support for the validity of the WRS data.

2. *Diagnostic inaccuracy.* The most important limitation of the data is the potential diagnostic inaccuracy at the time of the consultation. However, although this will reduce the accuracy of the detailed diagnostic information, the estimates of prevalence, new episode incidence and consultation rates for the chapter- and larger diagnostic-based groupings are likely to be unaffected with a balance between missed diagnosis and over-diagnosis.

3. *Pooling of the prevalence data.* Pooling of the prevalence data when broadening the analysis to include conditions outside chapter XII potentially overestimates prevalence because one person could have a condition in both groups (e.g. eczema and viral warts), but does not produce overestimates of incidence- and consultation-based rates nor inflate the prevalence of conditions included in chapter XII. We cannot quantify this excess in the present database but we believe that it is likely to be small and has little bearing on the main result, namely the frequency of consultation for skin conditions.

4. *Excluded skin conditions.* A selection of skin conditions outside chapter XII was made which did not include every relevant condition (e.g. chicken pox, measles and other virus exanthemata). A potentially similar limitation is applicable to any grouping of conditions which might overlap with the chapter-based ICD9 classification.

Implications for training of primary healthcare professionals

Our findings have important implications for education and training in primary care. Current undergraduate and postgrad-

uate medical, nursing and pharmacy training has little emphasis on dermatology.^{18,20,21} Until recently, dermatology was not a compulsory part of the undergraduate medical curriculum.²² Steps are in place to try and improve things,²³ but these do not apply to existing medical graduates, many of whom have had very little dermatology training. Postgraduate dermatology training for GPs is very limited.^{20,21}

New training requirements and a new curriculum covering several topic areas have recently been implemented by the RCGP.²⁴ The curriculum document entitled 'Skin Problems' is a welcome development, setting out a required knowledge base for GPs.²⁵ It could be improved further by tightening the link between curriculum content and the epidemiology of skin problems presenting in primary care, and the logistics of delivering and assessing the outcome of this educational activity need to be more explicit.²⁴ GP trainers have a particularly important role supporting the education of GP speciality registrars, but fulfilling that role may challenge their own knowledge base. In the list of the required knowledge base in another RCGP curriculum statement entitled 'Care of Children and Young People', there is no reference to atopic eczema, even though it is very common in children.²⁶ Nurses receive no formal training in dermatology and have few opportunities for postgraduate training especially in a multiprofessional environment.^{20,27} Like pharmacists, some practice nurses and nurse practitioners are independent prescribers and many have had little or no training in dermatology.²⁸

An 'inverse training law' seems to operate in dermatology: skin problems are the commonest new episode of illness reported in general practice but the availability and quality of training is least. There is an urgent need to review and modify undergraduate medical, GP and nursing curricula to match the dermatological health care needs of the population. This message also has implications for commissioners of dermatology services who have responsibilities to ensure the quality of service provision in terms of safety, effectiveness and patient experience for which adequate training is essential.²⁹

In conclusion, skin conditions are the commonest reason that people present to their GP surgery with a new problem. Dermatology training needs to reflect patient consulting experience and requires urgent review.

What's already known about this topic?

- Data from the 1991–92 General Practice Morbidity Survey suggested that 15% of the population seek advice from their general practitioner (GP) with a skin condition.
- This 15% figure was an underestimate as it only included conditions classified in chapter XII of the International Classification of Diseases Ninth Revision.

What does this study add?

- This study includes consultation data for non-chapter XII skin conditions.
- The prevalence estimate for skin conditions in GP consultations is 24%.
- This has implications for training and education of clinicians.

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