

## A 4-Year Retrospective Epidemiological Study of Common Dermatoses Among Pediatric from a Tertiary Referral Center in Pangasinan\*

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### ABSTRACT

**Background:** Pediatric dermatoses are multifactorial and diverse. Environmental factors play a significant role in skin disease. This study described the prevalence of common dermatoses among pediatric population seen at a tertiary referral center in Pangasinan.

**Methods:** This was a 4-year retrospective, single center, chart review study in a tertiary referral hospital in Pangasinan. The researchers reviewed both electronic and medical charts of all pediatric outpatient and inpatient referrals with dermatoses from January 1, 2019 to December 31, 2022 by utilizing Proportion sampling technique.

**Results:** This study reviewed a total of 501 (Males, 49.5% and Females, 50.5%) outpatient and inpatient pediatric patients who consulted due to skin related concerns. The majority of the patients were school-age children and adolescents followed by newborns, infants and toddlers respectively. Scabies infestation (n=76, 15.2%), Acne vulgaris (n=53, 10.6%) and Atopic dermatitis (n=48, 9.6%) were the top 3 common dermatoses among pediatric age groups. Scabies was the top diagnosis for both male (n=37, 14.9%) and female (n=39, 15.4%). Acne vulgaris (n=50, 31.6%) was the most common diagnosis in the adolescent age group.

**Conclusions:** There was wide variation in the most common dermatosis according to age, sex, and year. Poor sanitation, overcrowding and low socioeconomic status are important factors for the increased prevalence of parasitic infestations. Acne vulgaris was seen almost exclusively in adolescents. This study served as a preliminary epidemiological report on pediatric dermatoses in Region 1 Medical Center that may pave the way for well-controlled and better designed researches in the future.

**Keywords:** *pediatric dermatology, common pediatric dermatoses, epidemiological study*

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**Conflict of Interest:** N/A

### INTRODUCTION

Skin diseases account for a significant proportion of pediatric consultations. Ethnic, socioeconomic, and environmental factors influence their incidence. The increasing frequency of pediatric skin diseases represents a significant part of morbidity in children.

Epidemiology of skin diseases in the pediatric population differ from that of adults mainly because some diseases may only be seen exclusively amongst children. The presentation and manifestation of several of these diseases are also different. Hence, the approach to treatment and management are not the same. Children are more vulnerable that needs special attention and care when it comes to treatment.

According to Castelo-Soccio, et. al, cutaneous problems are frequently seen in pediatric patients, there are up to 30 percent of pediatric primary care visits that involves a skin-related problem. Common dermatoses that are seen are atopic dermatitis, seborrheic dermatitis, contact dermatitis, and acne. (Castelo-Soccio L, 2017)

The common practice in dermatology is in the outpatient setting. However, there are some skin conditions where a child has to be admitted for cutaneous disease or a secondary systemic illness. The pediatricians are usually the first line with the pediatric patients. Thereafter, intra-hospitalization referrals are given to the respective departments. There are only a few studies describing the inpatient consultations in dermatology regarding the pediatric population and their effects on the management as inpatient. There are also few studies available about the epidemiology of pediatric skin diseases. There are not enough studies focusing on pediatric dermatology and in patient dermatology referrals here in the Philippines. This study will be of a great help for future studies alike. (Fatma S. Afsar, 2017)

Common dermatoses are often not recognized and misdiagnosed by non-dermatologists. Cutaneous problems may be present at the time of hospitalization or may develop during the stay in hospital, requiring consultation with a dermatologist. (Daye et al., 2019)

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Dermatoses are common in the pediatric population. They have certain disorder seen in this age group such as the prevalence of the diaper dermatitis and genetic disorders. Pediatric dermatological problems are common, but may require a consultation with dermatology. In other countries, appropriate diagnosis and therapy are sometime delayed and have few studies that have focused on pediatric dermatoses. This study will contribute to a better knowledge of pediatric skin conditions in our work environment.(Ahogo et al., 2018)

The pediatric skin diseases are common, multifactorial and diverse. Environmental factors play a significant role in skin disease. This study aimed to describe the prevalence of common dermatoses among pediatric population with ages 0-18 seen at a tertiary referral center in Pangasinan.

### SIGNIFICANCE OF THE STUDY

The aim of this study was to know the incidence rates and prevalence of pediatric skin diseases in our institution that was seen by the Dermatology Department that can subsequently serve as reference material for future comparative studies as the department is part of a tertiary care teaching hospital. The aim for this study was to know how important early diagnosis and on updated management of common diseases for both dermatologist and non-dermatologist physician. The aim of this Epidemiological study was to determine the pattern of skin diseases among children which are important for proper health care planning and management. This study will also be of great help to educate health care workers about the common dermatoses seen in the pediatric population.

### OBJECTIVES

The main objective of this study was to determine the epidemiological profile of common dermatoses of patients aged 0-18 years old, who were seen at the outpatient dermatology clinic, outpatient pediatric clinic with dermatoses, inpatient dermatology referrals at Region 1 Medical Center(R1MC) during the period January 2019 – December 2022.

The specific objectives declared below was attained at the end of this research study. The following was presented:

1. To determine the clinico-demographic profile of cases of pediatric dermatoses noted in the outpatient dermatology clinic, outpatient pediatric clinic with dermatoses, inpatient dermatology referrals at Region 1 Medical Center from January 2019 – December 2022 according to:

- 1.1 Age;
- 1.2. Sex; and
- 1.3. Location

2. To determine the top 10 most common dermatoses per year and overall for the year 2019-2022
3. To determine the top 10 most common dermatoses by sex
4. To determine the top 10 most common dermatoses by age groups: neonates (0-28 days); infants (1mo-12 months); toddler (13 months-3 years old); school age children (3 years- 12 years old); and adolescent (13-18 years).

### METHODOLOGY

This was a 4-year retrospective study, single center, chart review study. We reviewed all the electronic records and medical charts of all patients aged 0–18 years, who were seen at the outpatient dermatology clinic, outpatient pediatric clinic with dermatoses and inpatient dermatology referrals at Region 1 Medical Center during the period January 1, 2019 – December 31, 2022

#### Inclusion Criteria:

1. All patients aged 0-18 year old who consulted at R1MC who consulted due to skin related concerns (inpatient and outpatient).
2. All patient with 1<sup>st</sup> time consults
3. Patients that are for follow up with new complaints and diagnosis compared to the previous consults will be included in the study
4. If the patient has more than 1 diagnoses, all diagnoses will be accounted for.

#### Exclusion Criteria:

1. Patients with incomplete data in the electronic medical records and medical charts.
2. Patients with vague diagnoses.
3. Follow ups with the same diagnosis as the 1<sup>st</sup> consult will be excluded in the study.
4. Patients with diagnosis not related to dermatology.

#### Sampling Technique

In the investigation that was carried out, the researcher conducted Proportion sampling technique in the study. The formula below will be used.

$$n = \frac{[(DEFF) (NP) (1-p)]}{[d^2/Z^2(1-\alpha/2(N-1)+p(1-p))]}$$

Utilizing this formula, the investigator set the design effect for cluster survey to 1.0 with 50% anticipated frequency and confidence level of 95%. Based on the previous census, at least  $n=10,000$  patients presenting dermatoses was encountered within the inclusive years. Employing Proportion sampling technique, the investigator obtained  $n=370$  patients for analysis.

### Sample Size for Frequency in a Population

Population size (for finite population correction factor or  $fpc(N)$ ): 10000

Hypothesized % frequency of outcome factor in the population ( $p$ ): 50%  $\pm$  5

Confidence limits as % of 100 (absolute  $\pm$  %)( $d$ ): 5%

Design effect (for cluster surveys-DEFF): 1

### Sample Size(n) for Various Confidence Levels

| Confidence | Level(%) | Sample Size |
|------------|----------|-------------|
| 95%        |          | 370         |
| 80%        |          | 162         |
| 90%        |          | 264         |
| 97%        |          | 450         |
| 99%        |          | 623         |
| 99.9%      |          | 978         |
| 99.99%     |          | 1316        |

Equation

$$\text{Sample size } n = \frac{[DEFF \cdot Np(1-p)]}{[(d^2/Z^2)_{\alpha/2} \cdot (N-1) + p(1-p)]}$$

### Statistical Treatment of Data

The researcher encoded the data on Microsoft Excel version 2017. The researcher utilized Statistical Package for Social Sciences (SPSS) version 23 for Macintosh. The following statistical analyses was proposed.

Frequency Distribution and Percentage. These used to determine the clinico-demographic profile and specific dermatoses noted in the Department Dermatology at Region 1 Medical Center from January 2019 – December 2022 according to age, sex, and location.

Chi Square. This was used to determine the significant difference between specific dermatoses encountered in the Department Dermatology at Region 1 Medical Center from January 2019 – December 2022 when grouped according to age, sex, and location.

### Data Gathering

A written request was given to the head of the medical records section prior to data gathering. A list of patients aged 0-18 year old who consulted at R1MC due to skin related concerns (inpatient and outpatient) was requested and prepared by the medical records section. The electronic medical records and charts was retrieved and reviewed.

Epidemiologic data (age, sex, location), family and personal history, ancillary diagnostics, and final diagnosis will be extracted from the patient's medical records. The patients was classified into five different age groups: neonates (0-28 days); infants (1mo-12 months); toddler (13 months-3 years old); school age children (4 years- 12 years old); and adolescent (13-18 years).

The primary investigator was responsible for collection, data gathering and to warrant that the data to be collected was complete and accurate. All records was kept at a secured cabinet and the computer used was password protected and was stored safely at all times, only the researchers involved in this study had access to the results. All resources of data which was indicative to the identity of the participants in the action research will be destroyed after completion of the study. Only necessary information and ICD codes was gathered and no other revealing personal information was recorded upon throughout the study. All information was encoded in a password-protected computer and will be deleted after 3 months from the completion the study. There was no monetary benefits and incentives of any kind that was used in this research study. All information was kept confidential.

### Outcome measures

The primary outcome of this study was to describe the clinico-demographic profiles of patients aged 0–18 years, who were seen at the outpatient dermatology clinic, outpatient pediatric clinic with dermatoses and inpatient dermatology referrals at Region 1 Medical Center from January 2019 to December 2022. Secondary outcomes included the magnitude of consults involving pediatric patients who were seen at the outpatient dermatology clinic, outpatient pediatric clinic with dermatoses and inpatient dermatology referrals at R1MC, as well as the extent of dermatological concerns by identification and enumeration of the most common dermatoses affecting the patients aged 0–18 years, who were seen at the outpatient dermatology clinic, outpatient pediatric clinic with dermatoses and inpatient dermatology referrals at R1MC from January 2019 to December 2022.

## Ethical Considerations

This study was in compliance with declaration of Helsinki. The researcher confirmed adherence to the principle of Helsinki 2008. This protocol was reviewed by Region 1 Medical Center Research Committee. There were no physical risks associated with this study. All information gathered from the chart review remained confidential among the investigators. Each participant was coded. The names of the patients did not appear in any report or publications. During and after the research procedure, all records was kept at a secured cabinet and the computer used was password protected and will be stored safely at all times, only the researchers involved in this study had access to the results. All resources of data which was indicative the identity of the participants in the action research will be destroyed after completion of the study. Only necessary information and ICD codes was gathered and no other revealing personal information was recorded upon throughout the study. All information was encoded in a password-protected computer and will be deleted after 3 months from the completion the study. This research adhered to the principles of transparency, legitimate purpose, and proportionality in the collection, retention, and processing of personal information (Data Privacy Act of 2012). There were no direct benefits to the participants in the study. There was no monetary benefits and incentives of any kind that was used in this research study. Informed consent was not used. All information was kept confidential. The rights to publication belong to the primary author and there are plans for publication in the future.

## RESULTS

Between January 2019 and December 2022, we reviewed charts of 501 pediatric patients (inpatient and outpatient) who consulted due to skin related concerns, with first time consults and new complaints. 248 Male (49.5%) and 253 Female (50.5%), were included in the study (*Figure 1*).

According to the age group, we reviewed 18 neonates (3.6%), 60 infants (12%), 105 toddlers (21%), 160 school-aged children (31.9%), 158 adolescents (31.5%). (*Figure 2*)

454 patients (92%) who consulted resides within Pangasinan area, majority of whom lives in Dagupan City (188 patients, 37.5%) and 41 patients (8%) consulted resides outside Pangasinan (*Figure 3*).

The 10 most common pediatric dermatoses in the year 2019 (*Table 1*.) were as follows: Scabies infestation (17.1%), Atopic dermatitis (8.1%), Bullous impetigo (6.5%), Impetigo contagiosa (5.7%), Infantile seborrheic dermatitis

(4.9%), Urticaria (4.9%), Seborrheic dermatitis (4.1%), Tinea corporis (4.1%), Allergic contact dermatitis (3.3%), Acne vulgaris (3.3%), Molluscum contagiosum (3.3%), Tinea versicolor (3.3%).

The 10 most common pediatric dermatoses in the year 2020 (*Table 2*.) were as follows: Scabies infestation (15.6%), Atopic dermatitis (14.8%), Pediculosis Capitis (7.4%), Bullous impetigo (6.6%), Seborrheic dermatitis (5.7%), Tinea versicolor (5.7%), Irritant contact dermatitis (4.1%), Acne vulgaris (4.1%), Impetigo contagiosa (4.1%), Ecthyma (3.3%).

The 10 most common pediatric dermatoses in the year 2021 (*Table 3*.) were as follows: Scabies infestation (16.8%), Acne vulgaris (16%), Atopic dermatitis (9.6%), Seborrheic dermatitis (7.2%), Ecthyma (5.6%), Tinea corporis (4%), Tinea cruris (4%), Irritant contact dermatitis (3.2%), Hansen's disease (3.2%), Allergic contact dermatitis (2.4%), Molluscum contagiosum (2.4%), Tinea versicolor (2.4%), Post-inflammatory hyperpigmentation (2.4%).

The 10 most common pediatric dermatoses in the year 2022 (*Table 4*.) were as follows: Acne vulgaris (18.3%), Scabies infestation (11.5%), Atopic dermatitis (6.1%), Bullous impetigo (5.3%), Irritant contact dermatitis (4.6%), Arthropod bite reaction (4.6%), Dyshidrotic eczema (3.1%), Ecthyma (3.1%), Hand foot and mouth disease (3.1%), Tinea versicolor (3.1%).

The overall most common type of dermatoses according to year and category between January 2019 and December 2022 was Dermatitis/ Eczema group, constituting a total of 27.5% of the study population, followed by Parasitic Infestations (21.6%) and Bacterial infections (18.0%). Other groups were Acneiform (11.4%), Fungal infections (11.2%), Viral infections (7.2%), Papulosquamous disorders (2.8%), Neutrophilic, eosinophilic disorders, mast cell disorders (2.6%), Eccrine and Apocrine disorders (2.6%), Reactive erythemas (2.2%), Tumors (2.2%), Melanocytic disorders (2%), Hair and nail disorders (1.8%), Autoimmune disorders (1.6%), Vascular disorders (1.2%), Disorders of cornification (0.4%), and others (3.4%). *The most common dermatoses according to year (2019-2022) were presented in Figure 4.*

Scabies infestation was the most common diagnosis among all common dermatoses between January 2019 and December 2022, with a total of 15.2% of the study population. Acne vulgaris (53, 10.6%) was the second most common diagnosis. Atopic dermatitis was the most common diagnosis in the dermatitis group affecting 9.6% of the study population. Seborrheic dermatitis and Bullous impetigo both accounting to 4.8% each of the study population. Irritant contact dermatitis and Tinea versicolor came in 5th both accounting to 3.6%

each of the study population followed by Pediculosis capitis and Impetigo contagiosa both accounting to 3.4% each of the study population. Other most common dermatosis were as follows: Ecthyma (16, 3.2%), Tinea Corporis (15, 3%), Arthropod bite reaction (14, 2.8%) and Molluscum contagiosum (12, 2.4%). *The top ten most common dermatoses according to year (2019-2022) were presented in Table 5.*

The overall most common type of dermatoses according to sex between January 2019 and December 2022 was the Dermatitis/ Eczema group on both sexes, constituting a total of 28.2% for Males and 26.9% for Females.

For the Male group, the second most common type of dermatoses was Bacterial infections with 19.8% of the study population, with Ecthyma (4.8%) being the most common diagnosis in the bacterial infections group. Other common diagnoses for the Male group were in order: Parasitic Infestation (18.1%), Acneiform (11.3%), Fungal infections (13.3%), Viral infections (7.7%), Papulosquamous disorders (2.8%), Neutrophilic, eosinophilic disorders, mast cell disorders (3.6%), Eccrine and Apocrine disorders (3.6%), Reactive erythemas (3.2%), Tumors (2%), Melanocytic disorders (1.2%), Hair and nail disorders (1.2%), Vascular disorders (1.2%), Autoimmune disorders (0.4%), and others (4%).

For the Female group, the second most common type of dermatoses was Parasitic Infestations with 24.9% of the study population, with Scabies infestation (15.4%) being the most common diagnosis in the Parasitic infestations group. Other common diagnoses for the Female group were in order: Bacterial infections (16.2%), Acneiform (11.5%), Fungal infections (9%), Viral infections (6.7%), Autoimmune disorders (5.5%), Hair and nail disorders (3.6%), Melanocytic disorders (3.2%), Papulosquamous disorders (2.8%), Tumors (2.4%), Neutrophilic, eosinophilic disorders, mast cell disorders (1.6%), Eccrine and Apocrine disorders (1.6%), Reactive erythemas (1.2%), Vascular disorders (1.2%), Disorders of cornification (0.8%) and others (3.2%). *The most common dermatoses according to sex were presented in Figure 5.*

The 10 most common pediatric diagnosis in Males seen between the 4 year time period were as follows: Scabies infestation (14.9%), Atopic dermatitis (10.1%), Acne vulgaris (10.1%), Seborrheic dermatitis (5.2%), Ecthyma (4.8%), Tinea versicolor (4.8%), Impetigo contagiosa (4%), Tinea corporis (3.6%), Irritant Contact Dermatitis (3.2%), Bullous impetigo (3.2%), Tinea cruris (3.2%), Arthropod bite reaction (2.8%), Urticaria (2.8%), Allergic contact dermatitis (2.4%), Miliaria rubra (2.4%), and Dyshidrotic eczema (1.2%). *The top ten most common*

*diagnosis in males were presented in Table 5.1 and Figure 5.1.*

The 10 most common pediatric diagnosis in Females seen between the 4 year time period were as follows: Scabies infestation (15.4%), Acne vulgaris (11.1%), Atopic dermatitis (9.1%), Pediculosis Capitis (6.3%), Bullous impetigo (6.3%), Seborrheic dermatitis (4.3%), Irritant Contact Dermatitis (4%), Dyshidrotic eczema (2.8%), Impetigo contagiosa (2.8%), Arthropod bite reaction (2.8%), Systemic Lupus Erythematosus (2.8%), Molluscum contagiosum (2.4%), Tinea corporis (2.4%), Post-inflammatory hyperpigmentation (2.4%), Ecthyma (2.8%), Allergic contact dermatitis (2%), Nummular eczema (2%), Furunculosis (1.6%), Pityriasis rosea (1.6%). *The top ten most common diagnosis in females were presented in Table 5.2 and Figure 5.2.*

The most common dermatoses seen between the 4-year time period in Neonates were the Dermatitis/ Eczema group, constituting a total of 33.3 of the study population, with Infantile seborrheic dermatitis (16.7%) being the most common diagnosis in Neonates. The second most common dermatoses in Neonates were Eccrine and apocrine disorders (16.7%), with Miliaria rubra (11.1%) being the most common diagnosis in the eccrine and apocrine disorders group. Other common dermatoses in the Neonatal group were as follows: Acneiform (11.1%), Bacterial infections (11.1%), Tumors (11.1%), and Disorders of cornification (5.6%). *The most common dermatoses in Neonates were presented in Figure 6 and Table 6.*

The most common pediatric dermatoses seen between the 4-year time period in Infants were as follows: Scabies infestation (25%) followed by both Atopic dermatitis and Seborrheic dermatitis being the 2<sup>nd</sup> most common diagnosis affecting 11.7%, Staphylococcal scalded skin syndrome (10%), Infantile seborrheic dermatitis (10%), Bullous impetigo (8.3%). *The most common dermatoses in Infants were presented in Table 7.*

The most common pediatric dermatoses seen between the 4-year time period in Toddlers were as follows: Scabies infestation (15.2%), Atopic dermatitis (13.3%), Bullous impetigo (8.6%), Impetigo contagiosa (7.6%), Ecthyma (6.7%), Arthropod bite reaction (6.7%), Miliaria rubra (4.8%). *The most common dermatoses in Toddlers were presented in Table 8.*

The most common pediatric dermatoses seen between the 4-year time period in School-aged children were as follows: Scabies infestation (16.3%), Atopic dermatitis (13.1%), Pediculosis capitis (7.5%), Bullous impetigo (5.6%), Impetigo contagiosa (5.6%), Dyshidrotic eczema (5%), Ecthyma (6.7%), Irritant contact dermatitis (5%), Molluscum contagiosum (5%), Tinea versicolor (5%),

Tinea corporis (3.8%), Nummular eczema (2.5%), Arthropod bite reaction (2.5%), Ecthyma (2.5%), Hansen's disease (2.5%). *The most common dermatoses in school-aged children were presented in Table 9.*

The most common dermatoses seen between the 4-year time period in Adolescent were the Acneiform group, constituting a total of 32.3% of the study population, in which Acne Vulgaris being the most common diagnosis in this category affecting 31.6% of the acneiform diagnoses group. Other most common dermatoses in adolescents were as follows: Scabies infestation (12%), Seborrheic dermatitis (6.3%), Tinea cruris (4.4%), Tinea versicolor (4.4%) Systemic lupus erythematosus (4.4%), Atopic dermatitis (3.8%), Tinea corporis (3.8%), Prurigo nodularis (3.2%), Verruca vulgaris (3.2%). *The most common dermatoses in Adolescents were presented in Table 10 and Figure 7.*

Data were entered in Excel and further analyzed in SPSS v. 26. Descriptive statistics was used to summarize the gathered data. Clinico-demographic profile and dermatoses were presented as frequencies and percentages.

## DISCUSSION

This retrospective study was done to show the prevalence of different pediatric dermatoses and pattern of its occurrence in different pediatric age groups. The results of this study are in accordance with some previous studies. The variation in the incidence of certain skin diseases among studies may depend on the method of classification or may be due to differences between populations regarding genetic, socioeconomic, or environmental factors.

A female-to-male sex ratio of 1.1:1 was found in our study. This corresponds with the findings of some similar studies. The majority of the pediatric patients with common dermatoses consulted are school-age children and adolescents (31.9% and 31.5% respectively), while newborns, infants and toddler account for 3.6%, 12%, 21% respectively. The reason behind this is may be the environmental exposure that they get in compared with the younger age groups.

There was a variation in the prevalence of dermatosis among the age groups in our study. The Dermatitis/Eczemas group was the most common dermatoses in all age groups, found in 27.5% of the study population. Atopic Dermatitis (9.6%) was the most common diagnosis among the dermatitis group but came in as the 3<sup>rd</sup> most common reason for consult overall. This was more frequent in infants, toddlers, school-aged children and adolescents. It is a major public health

problem worldwide. Other common eczemas in the pediatric age group. Seborrheic Dermatitis (4.8%) and Infantile seborrheic dermatitis (1.6%) which were seen predominantly in the neonatal/ infantile stage and adolescent age. The difference in the incidence of various dermatitis suggest that it may be due to atopy, different environmental allergens, genetic factors and climate. Irritant contact dermatitis (3.6%) was also represented in the study, this may be due to the rampant use of herbal concoctions and self-medications by the parents and/ or guardians. This was also represented in our study.

The Parasitic infestation group were the second leading dermatoses seen between the 4-year timeline, with a total of 21.6% of the study population with Scabies Infestation (15.2%) as the most common diagnosis overall. It was the most common skin disease in children and one of the leading reasons for consults for both Male and Females. This was also more frequent in infants, toddlers and school-aged children, increasing gradually with increasing age. Other common parasitic infestations were Pediculosis capitis (3.4%) which came in 6<sup>th</sup> of the most common pediatric dermatosis with a total of 3.4% of the study population and Arthropod bite reaction constituting a total of 2.8%. Poor sanitation, sharing of clothes, towel, overcrowding in households and low socioeconomic status may be an important factor for the increased prevalence of parasitic infestations in pediatric dermatoses.

In our study, Infectious group were the third most commonly encountered pediatric skin condition. Out of total Infectious (bacterial, viral and fungal) (182, 36.4%), 18% patient had bacterial infections. This was more frequent in toddlers (30.5%) and school-aged children (16.9%). The most common presentations were Bullous Impetigo (4.8%), Impetigo contagiosa (3.4%), and Ecthyma (3.2%) of the bacterial infections group. Impetigo is commonly a pediatric dermatosis who reside in hot humid climates. It is caused almost exclusively by *Staphylococcus aureus*. Poor hygiene along with poor sanitation may be the cause of increased prevalence of bacterial infections in developing countries. After bacterial infections, Fungal infections (11.2%) followed, and the most common presentation was Tinea Versicolor (3.6%) followed by Tinea Corporis (3%). The reason behind may be the hot and humid temperature in the Philippines. The finding is similar to many studies where Infectious and Parasitic infestations are common in tropical regions of many Asian and African countries. Viral infections constituted about 7.2% of the total infections. This was more frequently seen in school-aged children, and not surprisingly, the most common viral dermatoses presented were Mollusum

contagiosum (2.4%) followed by Verruca Vulgaris (1.6%) and Hand, foot, and mouth disease (HFMD) (1%). Molluscum contagiosum was more prevalent in school-aged children, whereas the peak age for warts is in the adolescent age. An outbreak of HFMD was observed during the year 2022, with infants and toddlers were frequently affected.

Acne was the most common dermatosis among the adolescent age group and the 2<sup>nd</sup> most common reason for consult. It was seen more in females (11.1%) vs males (10.1%). Acne is a noticeable dermatosis when appearance is important and embarrassment in appearance is distressing to the adolescents affected and may be the reason for consult. It may contribute to lower self-esteem, feelings of unattractiveness and worthlessness in this age group. This shows variation of the common dermatoses within the pediatric population.

Pigmentary/ Melanocytic disorders account for 2% of the cases. The incidence rate of this diagnostic group, which included post-inflammatory hyper- or hypopigmentation, Mongolian spots and pityriasis alba, may be ascribed to significant stress to the parents and shame to the affected based on the appearance of the lesions as a reason for consult at the outpatient department.

Miliaria, "heat rash," "prickly heat," or a "sweat rash," is a frequently seen skin disease triggered by blocked eccrine sweat glands and ducts. The most common dermatoses presented in the eccrine group were Miliaria Rubra (2% of the study population), followed by miliaria crystallina (0.4%) and miliaria pustulosa (0.4%), with neonates and toddlers frequently affected. It is most common in warm, humid climates during the summer months.

In this study, the incidence of the hair and nail disorders (1.8%) to be considerably lower with Alopecia areata (0.8%) being the most common dermatosis in the hair and nails group. It was more prevalent in school-aged children.

There is a high incidence of Urticaria (2.2%) in our study was surprising with 11 cases noted. Papulosquamous disorders were seen in fewer patients (2.8%) with Pityriasis rosea (1.2%) being the most commonly seen in this category, followed by Psoriasis (0.4%) and Lichen striatus (0.4%). Genodermatoses or disorders of cornification were very rare in the study population (0.4%) and a case of Harlequin ichthyosis (0.2%) was seen in this institution. In Autoimmune disorders, Systemic Lupus Erythematosus were seen in 1.6% of the study population. It was more prevalent in adolescent age group.

## CONCLUSION

In conclusion, there was wide variation in the most common dermatosis according to age, gender, and the year of consults. The majority of the pediatric patients with common dermatoses consulted are school-age children and adolescents followed by newborns, infants and toddler respectively. Scabies infestation was the most common dermatosis in children, for both Males and Females, and the leading reason for consults. Poor sanitation, sharing of clothes, towel, overcrowding in households and low socioeconomic status may be an important factor for the increased prevalence of parasitic infestations in pediatric dermatoses. Acne was the most common dermatosis among the adolescent age group and the 2<sup>nd</sup> most common reason for consult. Atopic Dermatitis was the most common diagnosis among the dermatitis group but came in as the 3<sup>rd</sup> most common reason for consult overall. The findings are similar to studies in the common dermatoses seen in the pediatric population in tropical regions of many Asian and African countries. This study serves as preliminary epidemiologic report on pediatric dermatoses in Region 1 Medical Center and may pave the way for well-controlled and better designed researches in the future.

## DISCLOSURE

There are no conflicts of interest with respect to the research, authorship, and/or publication of this research.

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## Figures and Tables

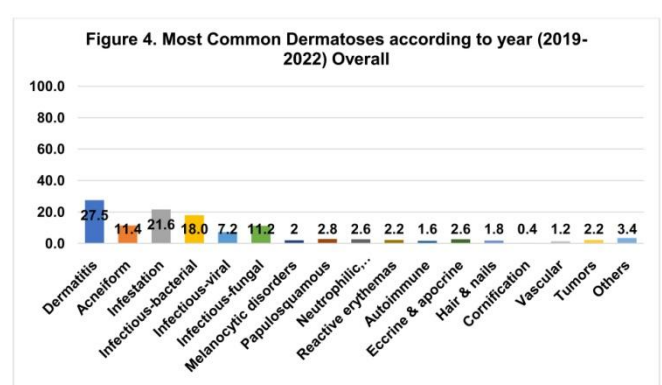
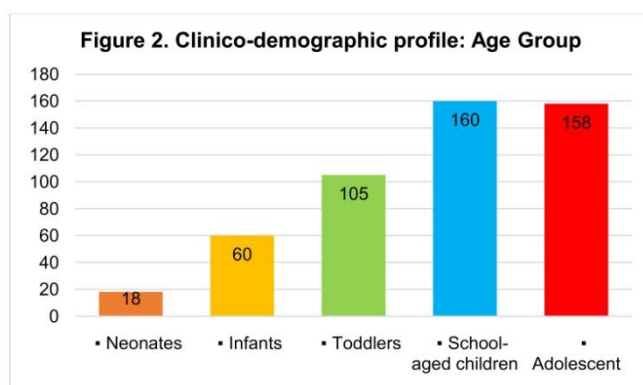
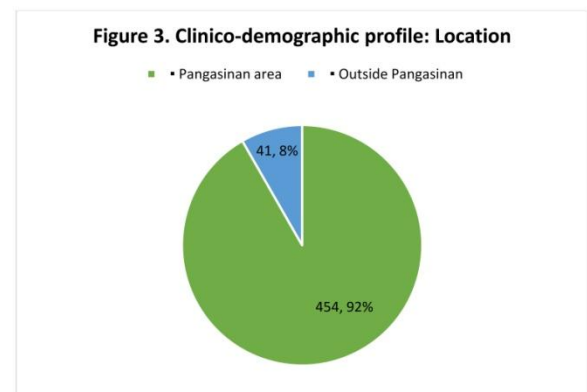
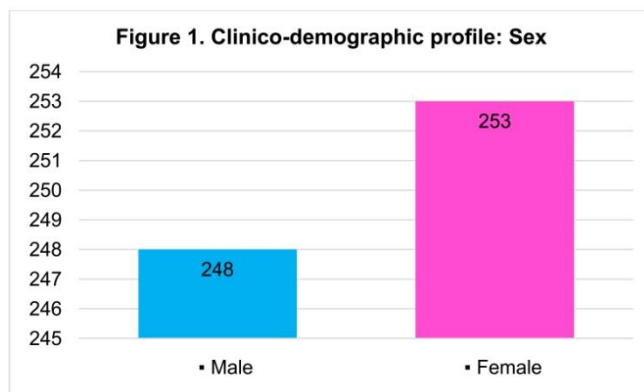


Figure 5. Most common dermatoses according to sex

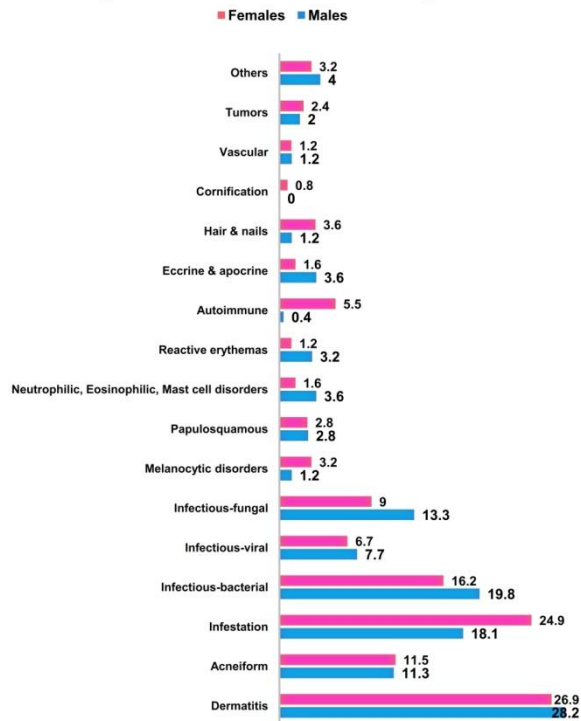


Figure 5.1. Top 10 Most Common Diagnosis in Males (%)

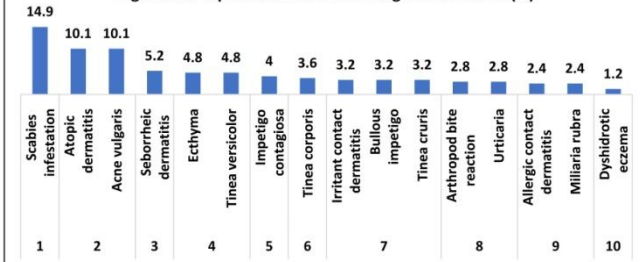


Figure 5.2. Top 10 Most Common Diagnosis in Females (%)

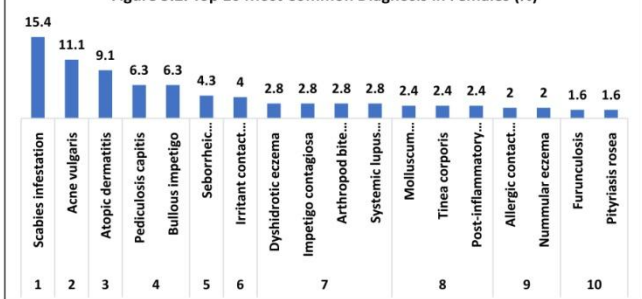


Figure 6. Most common dermatoses according to age group (Neonates)

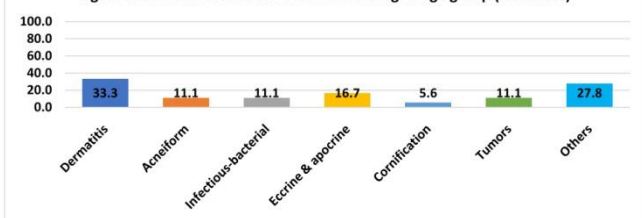


Figure 7. Most common dermatoses according to age group (Adolescent)

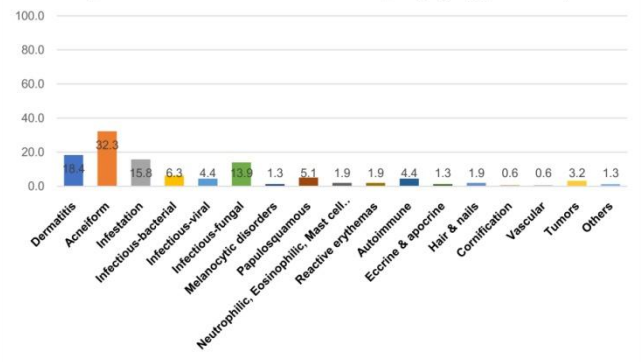


Table 1. Ten Most Common Dermatoses in 2019

|   | Diagnosis                       | n  | %    |
|---|---------------------------------|----|------|
| 1 | Scabies infestation             | 21 | 17.1 |
| 2 | Atopic dermatitis               | 10 | 8.1  |
| 3 | Bullous impetigo                | 8  | 6.5  |
| 4 | Impetigo contagiosa             | 7  | 5.7  |
| 5 | Infantile seborrheic dermatitis | 6  | 4.9  |
|   | Urticaria                       | 6  | 4.9  |
| 6 | Seborrheic dermatitis           | 5  | 4.1  |
|   | Tinea corporis                  | 5  | 4.1  |
| 7 | Allergic contact dermatitis     | 4  | 3.3  |
|   | Acne vulgaris                   | 4  | 3.3  |
|   | Molluscum contagiosum           | 4  | 3.3  |
|   | Tinea versicolor                | 4  | 3.3  |

Table 2. Ten Most Common Dermatoses in 2020

|   | Diagnosis                   | n  | %    |
|---|-----------------------------|----|------|
| 1 | Scabies infestation         | 19 | 15.6 |
| 2 | Atopic dermatitis           | 18 | 14.8 |
| 3 | Pediculosis capitis         | 9  | 7.4  |
| 4 | Bullous impetigo            | 8  | 6.6  |
| 5 | Seborrheic dermatitis       | 7  | 5.7  |
|   | Tinea versicolor            | 7  | 5.7  |
| 6 | Irritant contact dermatitis | 5  | 4.1  |
|   | Acne vulgaris               | 5  | 4.1  |
|   | Impetigo contagiosa         | 5  | 4.1  |
| 7 | Ecthyma                     | 4  | 3.3  |

Table 3. Ten Most Common Dermatoses in 2021

|   | Diagnosis                           | n  | %    |
|---|-------------------------------------|----|------|
| 1 | Scabies infestation                 | 21 | 16.8 |
| 2 | Acne vulgaris                       | 20 | 16   |
| 3 | Atopic dermatitis                   | 12 | 9.6  |
| 4 | Seborrheic dermatitis               | 9  | 7.2  |
| 5 | Ecthyma                             | 7  | 5.6  |
| 6 | Tinea corporis                      | 5  | 4    |
|   | Tinea cruris                        | 5  | 4    |
| 7 | Irritant contact dermatitis         | 4  | 3.2  |
|   | Hansen's disease                    | 4  | 3.2  |
| 8 | Allergic contact dermatitis         | 3  | 2.4  |
|   | Molluscum contagiosum               | 3  | 2.4  |
|   | Tinea versicolor                    | 3  | 2.4  |
|   | Post-inflammatory hyperpigmentation | 3  | 2.4  |

**Table 4. Ten Most Common Dermatoses in 2022**

|   | Diagnosis                   | n  | %    |
|---|-----------------------------|----|------|
| 1 | Acne vulgaris               | 24 | 18.3 |
| 2 | Scabies infestation         | 15 | 11.5 |
| 3 | Atopic dermatitis           | 8  | 6.1  |
| 4 | Bullous impetigo            | 7  | 5.3  |
| 5 | Irritant contact dermatitis | 6  | 4.6  |
|   | Arthropod bite reaction     | 6  | 4.6  |
|   | Dyshidrotic eczema          | 4  | 3.1  |
| 6 | Ecthyma                     | 4  | 3.1  |
|   | Hand foot mouth disease     | 4  | 3.1  |
|   | Tinea versicolor            | 4  | 3.1  |

**Table 5. Top 10 Most Common Dermatoses according to year (2019- 2022) Overall**

|    | Diagnosis                   | n  | %    |
|----|-----------------------------|----|------|
| 1  | Scabies infestation         | 76 | 15.2 |
| 2  | Acne vulgaris               | 53 | 10.6 |
| 3  | Atopic dermatitis           | 48 | 9.6  |
| 4  | Seborrheic dermatitis       | 24 | 4.8  |
|    | Bullous impetigo            | 24 | 4.8  |
| 5  | Irritant contact dermatitis | 18 | 3.6  |
|    | Tinea versicolor            | 18 | 3.6  |
| 6  | Pediculosis capitis         | 17 | 3.4  |
|    | Impetigo contagiosa         | 17 | 3.4  |
| 7  | Ecthyma                     | 16 | 3.2  |
| 8  | Tinea corporis              | 15 | 3    |
| 9  | Arthropod bite reaction     | 14 | 2.8  |
| 10 | Molluscum contagiosum       | 12 | 2.4  |

**Table 5.1. Top 10 Most Common Diagnosis in Males**

|    | Diagnosis                   | n  | %    |
|----|-----------------------------|----|------|
| 1  | Scabies infestation         | 37 | 14.9 |
|    | Atopic dermatitis           | 25 | 10.1 |
| 2  | Acne vulgaris               | 25 | 10.1 |
| 3  | Seborrheic dermatitis       | 13 | 5.2  |
|    | Ecthyma                     | 12 | 4.8  |
| 4  | Tinea versicolor            | 12 | 4.8  |
| 5  | Impetigo contagiosa         | 10 | 4    |
| 6  | Tinea corporis              | 9  | 3.6  |
|    | Irritant contact dermatitis | 8  | 3.2  |
|    | Bullous impetigo            | 8  | 3.2  |
| 7  | Tinea cruris                | 8  | 3.2  |
|    | Arthropod bite reaction     | 7  | 2.8  |
| 8  | Urticaria                   | 7  | 2.8  |
|    | Allergic contact dermatitis | 6  | 2.4  |
| 9  | Miliaria rubra              | 6  | 2.4  |
| 10 | Dyshidrotic eczema          | 3  | 1.2  |

**Table 5.2. Top 10 Most Common Diagnosis in Females**

|    | Diagnosis                           | n  | %    |
|----|-------------------------------------|----|------|
| 1  | Scabies infestation                 | 39 | 15.4 |
| 2  | Acne vulgaris                       | 28 | 11.1 |
| 3  | Atopic dermatitis                   | 23 | 9.1  |
|    | Pediculosis capitis                 | 16 | 6.3  |
| 4  | Bullous impetigo                    | 16 | 6.3  |
| 5  | Seborrheic dermatitis               | 11 | 4.3  |
| 6  | Irritant contact dermatitis         | 10 | 4    |
|    | Dyshidrotic eczema                  | 7  | 2.8  |
|    | Impetigo contagiosa                 | 7  | 2.8  |
|    | Arthropod bite reaction             | 7  | 2.8  |
| 7  | Systemic lupus erythematosus        | 7  | 2.8  |
|    | Molluscum contagiosum               | 6  | 2.4  |
|    | Tinea corporis                      | 6  | 2.4  |
| 8  | Post-inflammatory hyperpigmentation | 6  | 2.4  |
|    | Allergic contact dermatitis         | 5  | 2    |
| 9  | Nummular eczema                     | 5  | 2    |
|    | Furunculosis                        | 4  | 1.6  |
| 10 | Pityriasis rosea                    | 4  | 1.6  |

**Table 6. Most common dermatoses in Neonates**

|   | Diagnosis                       | n | %    |
|---|---------------------------------|---|------|
| 1 | Infantile seborrheic dermatitis | 3 | 16.7 |
| 2 | Miliaria rubra                  | 2 | 11.1 |

**Table 7. Most common dermatoses in Infants**

|   | Diagnosis                            | n  | %    |
|---|--------------------------------------|----|------|
| 1 | Scabies infestation                  | 15 | 25   |
| 2 | Atopic dermatitis                    | 7  | 11.7 |
|   | Seborrheic dermatitis                | 7  | 11.7 |
| 3 | Staphylococcal scalded skin syndrome | 6  | 10   |
|   | Infantile seborrheic dermatitis      | 6  | 10   |
| 4 | Bullous impetigo                     | 5  | 8.3  |

**Table 8. Most common dermatoses in Toddlers**

|   | Diagnosis               | n  | %    |
|---|-------------------------|----|------|
| 1 | Scabies infestation     | 16 | 15.2 |
| 2 | Atopic dermatitis       | 14 | 13.3 |
| 3 | Bullous impetigo        | 9  | 8.6  |
| 4 | Impetigo contagiosa     | 8  | 7.6  |
| 5 | Ecthyma                 | 7  | 6.7  |
|   | Arthropod bite reaction | 7  | 6.7  |
| 6 | Miliaria rubra          | 5  | 4.8  |

**Table 9. Most common dermatoses in School-aged children**

|   | Diagnosis                   | n  | %    |
|---|-----------------------------|----|------|
| 1 | Scabies infestation         | 26 | 16.3 |
| 2 | Atopic dermatitis           | 21 | 13.1 |
| 3 | Pediculosis capitis         | 12 | 7.5  |
| 4 | Bullous impetigo            | 9  | 5.6  |
|   | Impetigo contagiosa         | 9  | 5.6  |
|   | Dyshidrotic eczema          | 8  | 5    |
| 5 | Irritant contact dermatitis | 8  | 5    |
|   | Molluscum contagiosum       | 8  | 5    |
|   | Tinea versicolor            | 8  | 5    |
| 6 | Tinea corporis              | 6  | 3.8  |
|   | Nummular eczema             | 4  | 2.5  |
| 7 | Arthropod bite reaction     | 4  | 2.5  |
|   | Ecthyma                     | 4  | 2.5  |
|   | Hansen's disease            | 4  | 2.5  |

**Table 10. Most common dermatoses in Adolescents**

|   | Diagnosis                    | n  | %    |
|---|------------------------------|----|------|
| 1 | Acne vulgaris                | 50 | 31.6 |
| 2 | Scabies infestation          | 19 | 12   |
| 3 | Seborrheic dermatitis        | 10 | 6.3  |
|   | Tinea cruris                 | 7  | 4.4  |
| 4 | Tinea versicolor             | 7  | 4.4  |
|   | Systemic lupus erythematosus | 7  | 4.4  |
| 5 | Atopic dermatitis            | 6  | 3.8  |
|   | Tinea corporis               | 6  | 3.8  |
| 6 | Prurigo nodularis            | 5  | 3.2  |
|   | Verruca vulgaris             | 5  | 3.2  |