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ORIGINAL ARTICLE

Characteristics and incidence of scabies among pediatric patients at IMCI clinic of caringin primary health center (2022-2023)

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ABSTRACT

Scabies, a parasitic skin infestation caused by Sarcoptes scabiei, primarily affects children under five, presenting with intense pruritus and sleep disturbances. In Bandung City, scabies ranks among the top 21 most commonly reported diseases, with 11,623 cases recorded. Risk factors include poor hygiene practices and suboptimal environmental conditions. This study aimed to characterize the incidence of scabies among children under five treated at the Integrated Management of Childhood Illness (IMCI) Clinic of Caringin Primary Health Center, Bandung City, during 2022–2023. We conducted a descriptive cross-sectional study utilizing secondary data from medical records of diagnosed scabies cases. Analyzed variables included age, gender, nutritional status, and case classification (new or recurrent). Among 196 identified cases (154 in 2022; 42 in 2023), the incidence rate declined from 13.6 to 4.3 per 1,000 children. Most patients were male (57.1%) and aged 2–3 years (49.49%). In terms of nutritional status, 58.67% had normal nutrition, while 21.43% were undernourished, and 17.86% were severely stunted. Recurrent cases predominated in both years, though new cases proportionally increased in 2023. The observed decline in incidence may reflect the efficacy of treatment interventions and preventive programs(e.g., hygiene promotion and sanitation surveillance). However, the the persistent rise in new cases suggest ongoing community transmission. In conclusion, scabies incidence among toddlers attending the IMCI Clinic showed a downward trend during 2022-2023, with highest prevalence in boys aged 2–3 years and normal nutritional status.

Keyword: Characteristics, incidence, nutritional status, pediatric, primary health care, scabies

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INTRODUCTION

The mite Sarcoptes scabiei *var. hominis* is the etiological agent responsible for scabies, a parasitic dermatological condition characterized by the penetration of the parasite into the epidermal layer of the skin. Infestation with *S. scabiei* typically induces intense pruritus, particularly at night, which can significantly impair sleep quality.[1] The incidence of scabies is influenced by multiple determinants, including age, sex, personal hygiene practices, communal use of personal items, population density, awareness and knowledge of the disease, as well as the prevailing socioeconomic and environmental conditions within a community.[2] Scabies remains a significant global public health concern, affecting over 200 million individuals at any given time, with an estimated annual incidence exceeding 400 million cases.[3] Data from the Indonesian Ministry of Health (Ministry of Health, Republic of Indonesia) in 2018 indicated that scabies ranked third among the twelve most prevalent dermatological conditions, with a reported prevalence ranging from 5.6% to 12.95%, based on data collected from primary healthcare centers (*Puskesmas*) across the country.[4] In 2021, the estimated prevalence of scabies in various regions of Indonesia ranged between 3.9% and 6%.[5] Furthermore, a 2021 report by the Bandung City Health Office identified scabies as one of the top 21 diseases with the highest number of newly reported cases, totaling 11,623 cases, or approximately 1.32% of the total disease burden reported.[6] Scabies is a globally distributed parasitic skin condition, with particularly high prevalence in tropical regions that feature dense population settings. Epidemiological data indicate that the disease disproportionately affects younger age groups, especially children and infants, with prevalence rates ranging from 5% to 50%.[7] The term “infants” in this context refers to children aged 0 to 5 years.[8] The underdeveloped immune systems of infants may exacerbate the clinical severity of scabies, particularly in contexts where personal hygiene is suboptimal.[9] Such circumstances can interfere with early childhood development, a critical period marked by significant anatomical and structural growth, both in specific systems and holistically.[10]

The "golden period" is a critical window of opportunity that denotes the early years of life, particularly during infancy and toddlerhood, when growth and developmental processes occur at an accelerated rate. Ensuring adequate nutritional intake during this stage is essential, as nutrient deficiencies may result in malnutrition, which remains a significant risk factor for increased morbidity and mortality among children under five.[11] Nutritional status is a fundamental determinant of child health, functioning as both a protective and a predisposing factor for disease outcomes.[12] Optimal physical and cognitive development during early childhood is contingent upon the consistent provision of nutritionally balanced diets that align with the child’s physiological requirements. Consequently, paediatric nutritional health services constitute an essential element of primary healthcare, aiming to guarantee that children receive sufficient and appropriate nutrition to support their holistic growth and development.[13] The monitoring of growth and development in children under five years of age constitutes a fundamental element of routine healthcare delivery within medical systems, ranging from primary care facilities such as community health centers (*Puskesmas*) to more advanced hospital settings. This monitoring process is designed to systematically observe and evaluate developmental progress through established medical criteria and statistical assessments.[14] Growth assessment commonly employs anthropometric measurements alongside clinical observation of physical signs, with anthropometry being the predominant method.

Comprehensive developmental evaluations may also include physical examinations, laboratory investigations, and radiological assessments.[15] In response to the high morbidity and mortality rates among children, the World Health Organization (WHO), in collaboration with the United Nations Children's Emergency Fund (UNICEF), developed the Integrated Management of Childhood Illness (IMCI) framework. This integrated approach consolidates multiple clinical interventions into a cohesive management strategy for pediatric illnesses. Indonesia has adapted this framework into the *Manajemen Terpadu Balita Sakit* (MTBS), which serves as a comprehensive protocol for managing sick children at the primary healthcare level. The MTBS program integrates health promotion, preventive measures, and curative interventions, specifically targeting the five leading causes of mortality in infants and young children in developing countries.[11] The MTBS applies to children aged two months to five years who present with health disturbances, with recent expansions to include guidelines for neonates from birth to two months, encompassing both healthy and ill infants. The program employs systematic flowcharts and clinical algorithms to facilitate disease classification, nutritional status assessment, and immunization delivery. Furthermore, caregivers receive education regarding appropriate medication administration at home, along with nutritional guidance tailored to support the child's recovery and ongoing development.[16]

This research was conducted at Caringin Primary Health Center, a primary healthcare center located in Bandung City, which focuses on delivering preventive and promotive health services to the local population. The facility offers a comprehensive range of medical services, including pharmacy services, general outpatient care, sterilization units, dental clinics, maternal and child health services, immunization and family planning, Integrated Management of Childhood Illness (IMCI) services, and medical treatment rooms. Caringin Primary Health Center serves two administrative sub-districts: Babakan Ciparay and Margahayu Utara. According to the 2021 Bandung City Health Profile, Babakan Ciparay is among the three most densely populated sub-districts in Bandung, with a total population of 145,444 individuals, including 4,421 children under five years old. This sub-district also exhibits the highest prevalence of nutritional problems among young children, with a rate of 9.64%. Data from the 2021 Annual Report of Caringin Primary Health Center indicate that 152 children under five were diagnosed with recurrent scabies infections.[17] The combination of high population density and prevalent malnutrition among young children in Babakan Ciparay creates conditions that facilitate the transmission of scabies. Consequently, this context provided the impetus for examining the epidemiological patterns and incidence of scabies among children under five presenting to the IMCI clinic at Caringin Primary Health Center during the period of 2022 to 2023.

METHODS AND SUBJECT

This study employed a descriptive cross-sectional design to examine the incidence and characteristics of scabies among children under five years of age who visited the Integrated Management of Childhood Illness (IMCI) clinic at Caringin Primary Health Center, Bandung City, during the period of 2022-2023. The cross-sectional approach was selected as it enables the assessment of the prevalence and distribution of scabies cases, along with the associated factors, at a specific point in time, which is appropriate for epidemiological surveillance and resource planning (Setia, 2016).[18]

The study population comprised all pediatric patients aged 0–59 months who were diagnosed with scabies during the study period.

A total sampling method was applied, whereby all eligible medical records meeting the inclusion criteria were included in the analysis to maximize representativeness and statistical power. The final sample consisted of 196 cases.

Inclusion Criteria

Inclusion criteria were as follows:

1. Children aged under five years (0–59 months)
2. Diagnosed with scabies based on clinical and/or microscopic criteria
3. Complete medical records including demographic data (age, sex), anthropometric measurements (body weight and height), and clinical diagnosis of scabies.

Exclusion Criteria:

Medical records that lack any required data points were excluded to ensure data completeness and reliability assessment of nutritional status.

Diagnosis of Scabies

The diagnosis of scabies was established by trained healthcare personnel through anamnesis and physical examination, in accordance with the major clinical criteria set by the International Alliance for the Control of Scabies (IACS). A diagnosis was confirmed when at least two of the following criteria were met:

1. Nocturnal pruritus (intense itching, especially at night)
2. Similar symptoms reported among household or community members, indicating potential transmission
3. Presence of characteristic burrows and mites, as observed through microscopic examination of skin scrapings
4. Microscopic identification of mite eggs or fecal pellets (scybala), providing definitive parasitological evidence.[19]

Nutritional Status

Nutritional status was evaluated using the WHO Child Growth Standards for children aged 0-5 years (WHO, 2006), with the weight-for-height Z-score (WHZ) used as an indicator of acute malnutrition. Anthropometric measurements were obtained following WHO protocols to ensure standardization and accuracy (de Onis et al., 2004). WHZ-scores were calculated and classified into four categories:

1. Overweight: WHZ > +2 to +3 standard deviations (SD)
2. Normal: WHZ between -2 and +2 SD
3. Wasted: WHZ between -3 and -2 SD
4. Severely wasted: WHZ < -3 SD

Children classified as overweight, wasted, or severely wasted were considered to have abnormal nutritional status, consistent with WHO malnutrition classification guidelines (WHO, 2006).[20]

Data Collection and Analysis

Data were retrospectively extracted from medical records by trained data collectors using a structured data extraction form to minimize errors and ensure consistency. The collected data were entered and analyzed using SPSS software. A descriptive univariate analysis was performed to present frequency distributions and percentages, providing an overview of patient characteristics, nutritional status, and scabies case patterns.

Ethical Consideration

This study was conducted in accordance with ethical standards and received approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Jenderal Achmad Yani, with reference number 006/UM1.01/2025. Patient confidentiality was strictly maintained by anonymizing data and restricting access to authorized personnel only.

RESULTS AND DISCUSSION

A total of 196 children under five years of age were diagnosed with scabies at the IMCI Clinic of Caringin Primary Health Center, Bandung City, during the period of 2022–2023. Of these, 154 cases (78.57%) were recorded in 2022, while 42 cases (21.43%) were reported in 2023 (Table 1). This distribution indicates a notably higher incidence of scabies in 2022 compared to 2023.

Table 1. Total Reported Cases of Scabies at the IMCI Clinic, Caringin Primary Health Center (2022-2023)

Year	Number of Cases (N)	Percentage (%)
2022	154	78.57
2023	42	21.43
Total	**196**	**100**

Further analysis of case classification revealed that in 2022, there were 60 new cases (38.96%) and 94 cases recurrent cases (61.04%). In 2023, 19 new cases (45.24%) and 23 recurrent cases (54.76%) were recorded, as shown in Table 2.

Table 2. Incidence of New and Reccurent Scabies Cases at the IMCI Clinic, Caringin Primary Health Center (2022-2023)

Year	New Cases (N)	New Cases (%)	Reccurent Cases (N)	Reccurent Cases (%)	Total Cases (N)
2022	60	38.96	94	61.04	154
2023	19	45.24	23	54.76	42
Total	**79**	**40.31**	**117**	**59.69**	**196**

Most children diagnosed with scabies were male (57.1%) and belong to the 2–3 years age group (49.49%), followed by those aged 3–5 years (47.45%). Only 3.06% of cases were observed in children aged 0–2 years. In terms of sex distribution, male children accounted for a larger proportion (57.1%) compared to females, as presented in Table 3.

Table 3. Characteristics of Pediatric Scabies Patients at the IMCI Clinic at Caringin Primary Health Center, Bandung City, 2022–2023, by Age and Sex

Characteristic	Frequency (N)	Percentage (%)
Age		
0–2 years	6	3.06
2–3 years	97	49.49
3–5 years	93	47.45
Gender		
Male	112	57.1
Female	84	42.9

Based on the WHO weight-for-height Z-score (WHZ), the majority of children (58.67%) had normal nutritional status. Among those with abnormal nutritional status, 21.43% were categorized as wasted, and 17.86% as severely wasted. A small proportion were classified as overweight or at risk of overweight (Table 4).

Table 4. Nutritional Status Distribution of Pediatric Scabies Patients at IMCI Clinic, Caringin Primary Health Center, Bandung City, 2022–2023

Nutritional Status	Frequency (N)	Percentage (%)
Severely Wasted	35	17.86
Wasted	42	21.43
Normal	115	58.67
Possible Risk of Overweight	1	0.51
Overweight	2	1.02
Obese	1	0.51
Total	**196**	**100**

This study aimed to analyze the incidence and characteristics of scabies among toddlers who visited the IMCI Clinic at Caringin Primary Health Center in Bandung City during 2022–2023. A total of 196 toddlers met the inclusion criteria. The majority of cases occurred in 2022, with 154 cases (78.57%), while 2023 recorded a significant decline to 42 cases (21.43%). Of the 154 cases recorded in 2022, 60 (38.96%) were classified as new cases, and 94 (61.04%) as recurrent. In 2023, the total number of cases declined to 42, with 19 (45.24%) new cases and 23 (54.76%) recurrent cases. Across the two-year period, 196 scabies cases were documented in total, consisting of 79 new cases (40.31%) and 117 recurrent cases (59.69%). The at-risk population included 4,421 children under five years ole. The incidence rate of scabies was 13.6 cases per 1,000 population in 2022, which decreased to 4.3 cases per 1,000 population in 2023.

This decrease in scabies cases may reflect the impact of clinical interventions and health education measures implemented by the health center. Treatment at Caringin Primary Health Center involved the administration of topical scabicidal agents (permethrin), antihistamines such as cetirizine and chlorpheniramine maleate, and-in cases complicated by secondary bacterial infections-systemic antibiotics, including amoxicillin, alongside antipyretics for fever management. Preventive efforts included health education campaigns promoting Clean and Healthy Living Behaviors (PHBS) and routine sanitation monitoring conducted by health officers at patients' residences. However, the increase in new scabies cases in 2023 suggests a rising infestation rate over the course of the year. Contributing factors to scabies transmission include direct contact with infected individuals, socioeconomic conditions, poor personal hygiene, and environmental determinants such as high population density, poor sanitation, and limited access to clean water. Demographically, Babakan Ciparay sub-district is one of the three most populous areas in Bandung City, with a total population of 145.444 and a pediatric population under five years of age totaling 4.421, according to the 2021 Bandung City Health Profile.

The predominance of cases within the 2–3 and 3–5-year age groups aligns with critical stages of early childhood development, particularly the pre-conceptual phase (2–4 years), during which children begin acquire language skills and engage in social interactions. Children aged 1–2 years typically engage in solitary play, whereas by ages 2–3 years, they begin to develop basic communicative abilities, although these skills are not fully matured. Upon reaching the preschool stage (3–6 years), children exhibit enhanced fine and gross motor skills and participate in more complex forms of play, including associative, dramatic, and skill-based play, which facilitate peer interaction at a level that aligns with their developmental stage.[21]

The higher incidence of scabies among male children may be attributed to comparatively lower levels of parental supervision regarding their personal hygiene compared to female children Additionally, male toddlers often engage in more physical intense or frequent interactions with infected peers, increasing their exposure risk. A study conducted at Dr. R.M. Djoelham General Hospital in Binjai found that male children were more susceptible to scabies infection than females. In contrast, parents tend to be more vigilant about the health and hygiene of female children, thereby reducing their risk of infection. Other contributing factors include poor sanitation conditions and the communal use of personal items, both of which facilitate the transmission of scabies.[22]

These findings are consistent with previous studies, including an investigation at Dr. R.M. Djoelham General Hospital in Binjai, where 67.4% of the 126 scabies patients were male. Similarly, a study by Pande Mirah Dwi Anggreni (2019) in Songan Village, Bali, reported a male predominance of 69% among 178 scabies patients. Nasution, Putra, and Sari (2021) also found that 80% of scabies sample in their sample of 50 patients were male, with only 20% being female.[11]

This study focused on children aged 0–5 years, highlighting a higher prevalence of scabies among males, particularly in the 2–5-year age group, which coincides with a developmental phase characterized by increased social interaction. Several risk factors contribute to the incidence of scabies, including direct contact with infected individuals, low socioeconomic status, poor personal hygiene, and environmental conditions such as overcrowded housing, inadequate sanitation, and limited access to clean water. These factors collectively influence a child's developmental trajectory, underscore the crucial role of early childhood growth and development in shaping long-term health outcomes.[4,5]

The present study examined the nutritional status of pediatric patients diagnosed with scabies at the IMCI Clinic of Caringin Primary Health Center, Bandung City, during 2022–2023. The data indicate that the majority of children (58.67%) had normal nutritional status, while a significant proportion were classified as severely stunted (17.86%) or wasted (21.43%). Only a small fraction of the sample was identified as overweight or obese. These findings align with several previous studies that reported no consistent or significant association between nutritional status and the risk of scabies infestation. Although malnutrition is generally considered a risk factor for many infectious diseases due to its adverse effects on immune function, scabies infestation appears to be more strongly influenced by factors such as close physical contact, hygiene practices, and environmental conditions, rather than nutritional status alone.[23]

This study has several limitations that should be considered when interpreting the findings. Firs, it did assess potential risk factors and variables that may influence the incidence of scabies,

including environmental, personal hygiene practices, and household crowding levels. Additionally, behavioral, socio-economic, and cultural aspects that could contribute to scabies transmission were not examined. Second, the results may not be generalizable to the broader population of children under five in Bandung City or other regions, as the data were limited to patients attending the IMCI Clinic at Caringin Primary Health Center. Third, due to limited human resources and equipment, the health center lacks adequate laboratory facilities, and consequently, scabies diagnosis was made solely through clinical assessment. Lastly, incomplete documentation of weight and height measurements in some medical records restricted the inclusion of certain cases, potentially affecting the representativeness and accuracy of nutritional status assessment.

CONCLUSION

The incidence rate of scabies among pediatric patients at the IMCI Clinic, Caringin Primary Health Center, Bandung City, showed a declining trend-from 13.6 cases per 1,000 population in 2022 to 4.3 cases per 1,000 population in 2023. The patient profile during 2022-2023 period presented that the most cases occurred in children aged 2 to 3 years (49.49%). Additionally, male children accounted for a higher proportion of scabies cases (57.1%), and a majority of the affected children (58.67%) had normal nutritional status.

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DECLARATION OF INTERESTS

The authors declare no conflicts of interest related to the conduct, preparation, and publication of this article.

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