

Factors Associated with the Incidence of Dermatitis at the Nagaswidak Community Health Center in Seberang Ulu II District, Palembang City, in 2025

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ABSTRACT

Dermatitis remains a significant public health concern in resource-limited settings. This study examined associations between knowledge, personal hygiene practices, water source quality, and dermatitis incidence. A cross-sectional analytical design involved 130 respondents stratified from 250 dermatitis cases at Nagaswidak Community Health Center, Palembang City, from July to August 2025. Data were collected using structured questionnaires with 30 items measuring demographic characteristics, dermatitis knowledge (11 items), personal hygiene practices (13 items), and water source characteristics (6 items). Dermatitis diagnosis was confirmed through clinical examination and medical records review. Analysis employed chi-square testing at $\alpha = 0.05$ significance level using IBM SPSS Statistics version 26. Results demonstrated statistically significant associations between all three variables and dermatitis incidence. Individuals with inadequate knowledge exhibited 1.920 times greater dermatitis risk compared to those with adequate knowledge ($p = 0.000$). Poor personal hygiene demonstrated 1.845 times elevated risk relative to good hygiene ($p = 0.000$). Poor water source quality showed 1.733 times higher risk than adequate water sources ($p = 0.000$). This investigation concluded that knowledge deficits, inadequate personal hygiene, and poor water source quality constitute modifiable risk factors requiring integrated public health interventions addressing individual behavior modification, hygiene practice standardization, and environmental sanitation infrastructure improvement.

Keywords: Dermatitis, Environmental Health, Knowledge, Personal Hygiene, Water Sources

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INTRODUCTION

Research Phenomenon

Dermatitis represents a significant public health concern affecting diverse populations across geographic regions and age groups. The condition is characterized by skin inflammation, which can manifest as acute, subacute, or chronic presentations, with clinical presentations including erythema, edema, vesicles, and persistent pruritus. According to Volke (2022), a meta-analysis examining prevalence data across resource-rich countries revealed a 12-month period prevalence of 9.2%, with substantially higher rates observed in children aged 0–5 years at 16.2%. More recent epidemiological evidence from Skayem (2025) demonstrated a global adult prevalence of 9.6% among individuals aged 16 years and older, with the highest burden concentrated in Asian regions, followed by Latin America and Europe. The disease demonstrates a marked female predominance across all geographic regions, a finding consistent across multiple epidemiological investigations. At the healthcare facility level, data from Palembang Health Office indicated that dermatitis and eczema ranked as the sixth most common disease in 2017 with 31,808 cases, subsequently rising to fourth position in 2018 with 73,600 reported cases, underscoring the escalating public health burden within the region.

The pathophysiological mechanisms underlying dermatitis involve multifactorial interactions between exogenous and endogenous determinants. Sun et al. (2025) reported that the global prevalence of atopic dermatitis reached 129 million cases in 2021, reflecting a 20% increase since 1990. Environmental stressors including humidity, temperature fluctuations, air pollution, and climate patterns directly contribute to disease exacerbation through cutaneous barrier dysfunction. Additionally,

psychosocial factors, stress, and anxiety serve as significant disease triggers, with a bidirectional relationship between dermatitis and mental health outcomes. The multifactorial etiology necessitates comprehensive investigation of modifiable risk factors, particularly those related to individual knowledge, personal hygiene practices, and environmental sanitation conditions.

Research Problem

Knowledge regarding dermatitis prevention and management remains suboptimal among community populations, particularly in resource-limited settings. Research conducted by Rautha et al. (2025) indicated significant knowledge gaps among healthcare providers managing atopic dermatitis, with lower average knowledge scores among dermatologists and pediatricians compared to allergists. These gaps are further pronounced within the general population, where limited health literacy regarding disease etiology, transmission pathways, and preventive measures substantially compromises primary prevention efforts. The inadequacy of knowledge translates into reduced behavioral compliance with evidence-based preventive strategies, including appropriate hygiene practices and environmental management. In urban fishing communities and resource-limited areas, knowledge deficits regarding dermatitis prevention correlate with increased disease incidence, suggesting that educational interventions targeting disease awareness represent critical public health priorities.

Personal hygiene practices constitute a modifiable determinant of dermatitis incidence and severity. Research by Amanda et al. (2025) investigating the relationship between personal hygiene and dermatitis incidence among patients at Kotabumi II Health Center found statistically significant associations (p -value = 0.000), with 63.3% of respondents experiencing severe dermatitis. Similarly, studies by Pratiwi and Diah (2023) and research from Desa Haria (2021) demonstrated significant relationships between personal hygiene dimensions and dermatitis occurrence (p -value = 0.04), with inadequate hygiene practices across multiple domains including hand and nail hygiene, clothing maintenance, and bedding management substantially elevating disease risk. Inadequate personal hygiene engenders direct cutaneous exposure to irritants and pathogens, facilitating dermatitis development among vulnerable populations. The prevalence of suboptimal hygiene practices reflects underlying factors including limited health awareness, insufficient access to hygiene resources, and constrained behavioral motivation within specific occupational and socioeconomic contexts.

Access to clean water sources and adequate sanitation infrastructure critically determines the feasibility of personal hygiene implementation and environmental disease control. Rahman et al. (2025) conducted a comprehensive water quality assessment in rural Indonesia, identifying physicochemical and microbiological contamination as independent risk factors for dermatitis, with 39.1% of participants reporting skin complaints predominantly comprising dermatitis and eczema. Significant associations were documented between skin disorders and low dissolved oxygen levels (mean 3.6 mg/L; p = 0.0001; prevalence ratio = 5.64) and elevated water hardness (mean 626 mg/L; p = 0.005; prevalence ratio = 2.38). In fishing communities within Padang City, analysis revealed significant associations between clean water source and dermatitis incidence (p = 0.05), with inadequate water quality preventing effective personal hygiene practices and precipitating secondary infections in affected individuals. Furthermore, research by Ardiansyah Akbar et al. (2025) investigating environmental factors among farmers demonstrated that humidity significantly contributed to irritant contact dermatitis (p = 0.047; 95% confidence interval: 1.464 to 0.011), highlighting the complex interplay between water-related environmental exposures and dermatitis pathogenesis. The nexus of inadequate water provision, poor sanitation infrastructure, and limited understanding of hygiene importance creates particularly vulnerable populations, particularly in rural and urban informal settlements.

Research Objectives, Urgency, and Novelty

This research aims to comprehensively examine the associations between knowledge regarding dermatitis, personal hygiene practices, clean water source utilization, and dermatitis incidence among patients attending Nagaswidak Community Health Center in Seberang Ulu II District, Palembang City, during 2025. The investigation employs a quantitative cross-sectional methodology examining 130 respondents stratified from a population of 250 dermatitis cases documented in 2024. The specific objectives encompass determining the frequency distributions of dermatitis cases and the three independent variables, and quantifying partial and simultaneous associations between knowledge,

personal hygiene, water sources and dermatitis using Chi-square statistical testing at $\alpha = 0.05$ significance threshold.

The urgency of this investigation derives from the escalating disease burden within the study catchment area and the identification of preventable determinants amenable to community-level intervention. Understanding local risk factor patterns enables targeted public health programming addressing specific community-level challenges. This research provides evidence to support policy formulation for health facility-based health promotion activities, community education initiatives, and environmental sanitation improvements. The investigation contributes to the existing literature by systematically documenting associations between three complementary behavioral and environmental factors within a specific geographic context, complementing previous studies that typically examined isolated determinants. The novelty lies in the integrated examination of knowledge, personal hygiene, and water source factors within the same population, establishing a comprehensive risk factor profile that enables multifaceted intervention development targeting individual behavior, household practices, and community-level environmental improvements.

RESEARCH METHODS

Research Type and Methodology

This investigation employs a quantitative research methodology with an analytical observational approach utilizing a cross-sectional study design. The cross-sectional design represents a research framework that examines the correlation between variables at a specific point in time, allowing researchers to observe and measure both independent variables (knowledge, personal hygiene, and water sources) and the dependent variable (dermatitis incidence) simultaneously within a defined population. According to Creswell and Creswell (2023), quantitative research involves systematic data collection and analysis of numerical information to investigate relationships between variables through structured approaches and predetermined hypotheses. This methodological choice enables the examination of associations between the three independent variables and dermatitis occurrence without temporal manipulation, making it particularly appropriate for identifying and characterizing risk factors within the community health center setting. Sugiyono (2023) emphasizes that cross-sectional studies are effective for understanding the prevalence of health conditions and their associated factors within specific populations at particular time points, facilitating rapid data collection and cost-efficient analysis suitable for resource-limited settings.

The investigation was conducted from July 8 to August 8, 2025, at Nagaswidak Community Health Center located in Seberang Ulu II District, Palembang City. This healthcare facility serves as the primary research site because it has documented a significant dermatitis caseload, with 250 cases recorded during 2024. The geographic location, situated in an urban informal settlement with known environmental sanitation challenges, provides an appropriate context for examining the relationship between knowledge, hygiene practices, water sources, and dermatitis incidence. According to Sudaryono (2023), the selection of research settings should be based on the accessibility of the target population and the relevance of environmental conditions to the research questions being investigated.

Study Population and Sampling Procedures

The research population consists of all patients with dermatitis who attended Nagaswidak Community Health Center during the 2024 calendar year, with a documented total of 250 cases. The accessible population comprises individuals who sought clinical care at the facility and received a confirmed diagnosis of dermatitis from qualified healthcare providers. The definition of the population as all dermatitis cases documented during a specific year ensures a clearly delineated target group from which systematic sampling can be conducted while maintaining epidemiological relevance. According to Emzir (2023), defining the population with specific temporal and geographic boundaries is essential for ensuring the applicability of research findings to identifiable populations and maintaining scientific rigor in quantitative investigations.

Sample size determination utilized the Slovin formula, a standard approach for calculating sample sizes from finite populations with predetermined margins of error. The formula calculation proceeded as follows: $n = N / (1 + Ne^2)$, where N represents the population size (250), e represents the acceptable

error margin (0.05 or 5%), and n represents the calculated sample size. Application of this formula yielded an initial sample size of 72 respondents. To account for potential data loss due to respondent refusal, incomplete questionnaires, or non-attendance, an additional 80 percent of the base sample was added as a buffer (approximately 58 additional respondents). This adjustment resulted in a final sample size of 130 respondents, providing adequate statistical power for detecting associations between variables while maintaining feasibility within the research timeframe. Sudaryono (2023) notes that including 20 to 25 percent additional respondents above the calculated minimum is recommended practice to address non-response and data quality issues in survey research.

The sampling methodology employed probability sampling using stratified random sampling techniques. This approach ensured that all dermatitis cases within the population had an equal and known probability of selection, reducing selection bias and enhancing representativeness. Stratification was performed by dividing the total patient population into strata based on temporal distribution (cases documented in different months or quarters of 2024), demographic characteristics (age groups or gender), or clinical severity classifications. Within each stratum, proportional allocation determined the number of respondents to be selected from each subgroup, maintaining the same percentage distribution as existed in the overall population. Following stratification, simple random sampling was applied within each stratum to select individual respondents. According to Machali (2017), stratified random sampling is particularly appropriate when the population contains heterogeneous subgroups with potentially different characteristics related to the study variables, as it ensures adequate representation of each stratum while maintaining the advantages of probability sampling.

Inclusion criteria for respondent selection specified that individuals must be residents of the Nagaswidak Community Health Center catchment area for a minimum of six months, possess ages between 15 and 55 years (representing the productive working population with presumed capacity to exercise autonomous health decisions regarding hygiene and water utilization), demonstrate the ability to read and comprehend questionnaire items in Indonesian language, and utilize locally available water sources for domestic purposes including bathing, laundry, and cooking. Exclusion criteria designated that individuals with recent residential relocation to the catchment area (within the preceding six months), those experiencing significant cognitive impairment or psychiatric illness documented in medical records, individuals who exclusively utilized purchased bottled water for all household purposes, and those with incomplete or internally inconsistent questionnaire responses would be excluded from the analysis. These criteria ensured that respondents possessed the cognitive capacity to provide accurate information regarding their knowledge, hygiene practices, and water source utilization.

Data Collection Instruments and Analysis Techniques

This research collected data through primary and secondary sources utilizing structured questionnaire instruments. Primary data comprised information obtained directly from respondents regarding their demographic characteristics, knowledge pertaining to dermatitis prevention and transmission, personal hygiene practices across multiple domains (body cleanliness, hand and foot hygiene, clothing hygiene, hair hygiene, and bedding management), and water source utilization for household purposes. Secondary data included documented dermatitis cases from the health center's medical records, which provided clinical confirmation of dermatitis diagnosis, demographic information, and epidemiological data regarding the pattern of disease within the catchment area. The questionnaire instrument contained 30 closed-ended questions organized into four sections addressing demographic characteristics, dermatitis knowledge (11 items), personal hygiene practices (13 items), and water source characteristics (6 items). Response options utilized dichotomous (yes/no) formatting and multiple-choice options allowing respondents to select single answers. According to Cresswell (2023), questionnaire-based data collection in quantitative research enables standardized measurement of variables across respondents, facilitates statistical analysis through coded responses, and provides efficient collection of data from larger samples compared to qualitative methods.

Knowledge regarding dermatitis was measured using an 11-item questionnaire addressing disease definition, classification, etiology, transmission routes, anatomical sites of involvement, clinical manifestations, characteristics of clean water, and handwashing procedures. Respondents received one point for each correct response, with total knowledge scores ranging from 0 to 11 points. Knowledge was classified into two categories: inadequate knowledge (scores 0 to 5 points) and adequate knowledge

(scores 6 to 11 points), with the cutoff point representing approximately fifty percent of the total possible score. This binary classification facilitates comparison of dermatitis incidence between knowledge groups while remaining interpretable in terms of health communication effectiveness. Personal hygiene was assessed through 13 items encompassing body cleanliness (three items regarding bathing frequency, antiseptic soap use, and personal soap usage), hand, foot, and nail hygiene (three items on handwashing, nail trimming, and foot washing), clothing hygiene (two items), hair hygiene (two items), and bedding management (three items). Each affirmative response contributed one point, with total scores ranging from 0 to 13 points. Personal hygiene was classified as poor (0 to 6 points) or good (7 to 13 points). Water source characteristics were evaluated using six items assessing the specific source (piped water, well, surface water, rain, or other), and organoleptic qualities including absence of color, taste, and odor, continuity of supply, and sufficiency for household consumption (60 liters per person daily). Responses were scored dichotomously, with scores ranging from 0 to 6 points and categorized as poor water source (0 to 3 points) or good water source (4 to 6 points). These classification thresholds align with standard cutoff points used in similar health research investigations and published in peer-reviewed literature examining water quality and health outcomes (Rahman et al., 2025). Dermatitis diagnosis was confirmed by clinical examination performed by healthcare providers at the community health center and documented in medical records, with respondents stratified into case (dermatitis present) and control (dermatitis absent) categories.

Data analysis was conducted using IBM SPSS Statistics version 26 software and proceeded through univariate and bivariate stages. Univariate analysis provided descriptive characterization of each variable including frequency distributions, percentages, and central tendency measures for all variables examined. This analysis produced summary tables displaying the frequency and relative percentage of respondents distributed across categories of knowledge (inadequate versus adequate), personal hygiene (poor versus good), water sources (poor versus good), and dermatitis status (case versus control). Univariate analysis facilitated identification of the distribution of each independent variable and dependent variable within the sample population. Bivariate analysis examined associations between each independent variable and the dermatitis outcome using Pearson chi-square tests with statistical significance established at $\alpha = 0.05$. The chi-square test, as described by Valarmathi et al. (2024), is a nonparametric statistical procedure for analyzing associations between categorical variables, comparing observed frequency distributions with expected distributions under the null hypothesis of independence. The chi-square test was appropriate for this investigation because all variables were measured at the categorical/nominal level, and the research design did not assume normal distribution of variables. Chi-square calculations produced test statistics, degrees of freedom, p-values, and effect size measures, which were interpreted according to standard statistical conventions. P-values less than 0.05 indicated statistically significant associations between independent and dependent variables, suggesting that the observed relationship was unlikely to occur by chance alone and represented a genuine population effect. The interpretation of chi-square results followed criteria whereby $p\text{-value} \leq 0.05$ indicated presence of a statistically significant relationship between variables, while $p\text{-value} \geq 0.05$ indicated insufficient evidence of association. According to Zaidi (2024), bivariate statistical testing using chi-square analysis is particularly well-suited for investigating associations between multiple categorical risk factors and health outcomes in cross-sectional epidemiological studies, and SPSS software provides reliable computation of these statistics with accompanying p-values for hypothesis testing.

Research Procedure and Data Management

The research procedure involved sequential phases of data collection, processing, and analysis. Following initial approval from institutional ethics committees and written informed consent from all respondents, field staff systematically identified eligible respondents from community health center patient records and clinic attendance. Trained data collectors administered questionnaires through face-to-face interviews conducted in Indonesian language at convenient locations within the health center or community settings. Interview-based questionnaire administration ensured clarification of unclear questions, complete response to all items, and verification of responses during the interview process. Concurrent with questionnaire administration, clinical dermatitis status was determined through medical record review confirming diagnosis made by qualified healthcare providers. Immediately following data collection, questionnaire responses were coded into numerical values suitable for computer entry, with

categories assigned consistent numerical codes (for example, "yes" = 1, "no" = 0 for dichotomous items, and "good" = 1, "poor" = 0 for ordinal variables transformed to binary format).

Data management proceeded through editing, coding, entry, and cleaning phases as recommended by contemporary quantitative research methodology literature. Editing involved careful review of all completed questionnaires during and immediately after data collection to verify completeness, logical consistency, and legibility of responses. Coding involved systematic assignment of numerical values to categorical responses according to a predetermined codebook, ensuring standardized transformation of qualitative response categories into quantitative data suitable for statistical analysis. Data entry was performed using SPSS software, with trained data entry personnel creating electronic records containing all respondent information and variable values. Double-entry verification was performed on a subset of questionnaires (approximately ten percent) to identify and correct transcription errors. Cleaning procedures encompassed identification and resolution of data inconsistencies, correction of out-of-range values, identification of missing data patterns, and assessment of univariate outliers. According to Arib Rusli et al. (2025), systematic data management procedures including editing, coding, entry, and cleaning are essential for ensuring data quality and minimizing errors that could compromise validity of statistical analyses and interpretation of results.

RESULTS AND DISCUSSION

Table 1. Hubungan Pengetahuan Dengan Kejadian Dermatitis

Kejadian Dermatitis		Total		<i>P-value</i>		<i>PR</i>	
Pengetahuan	Kurang Baik	Baik	%				
	n	%	n	%	N	%	1.920
Kurang Baik	59	80,8	14	19,2	73	100	0,000
Baik	24	42,1	33	57,9	57	100	
Total	83	63,8	47	36,2	130	100	331

Tabel 1 menunjukkan bahwa 80,8% responden dengan dermatitis memiliki pengetahuan yang rendah, sementara 42,1% memiliki pengetahuan yang baik. Hasil uji chi-square dengan nilai p 0,000 (kurang dari 0,05) menunjukkan adanya hubungan yang signifikan antara pengetahuan dan kejadian dermatitis. Nilai hasil *Prevalence Ratio* (PR) sebesar 1.920 menunjukkan bahwa responden dengan Pengetahuan Kurang Baik memiliki risiko 1.920 kali lebih besar untuk mengalami dermatitis dibandingkan dengan responden yang memiliki Pengetahuan Baik.

Table 2. Hubungan Personal Hygiene Dengan Kejadian Dermatitis

Kejadian Dermatitis					Total		<i>P-value</i>	<i>PR</i>	
Personal Hygiene	Kurang		Baik		%				
	n	%	n	%	N	%		1.845	
	Kurang	62	77,5	18	22,5	80	100	0,000	388
	Baik	21	42	29	58	50	100		
	Total	83	63,8	47	36,2	130	100		

Tabel 2 menunjukkan bahwa 77,5% responden dengan *Personal Hygiene* yang kurang mengalami dermatitis, sementara 42% responden dengan *Personal Hygiene* yang baik juga mengalami dermatitis. Hasil uji chi-square dengan

nilai $p < 0,000$ (kurang dari 0,05) menunjukkan bahwa terdapat hubungan antara kebersihan pribadi dan kejadian dermatitis. Nilai hasil *Prevalence Ratio* (PR) sebesar 1.845 menunjukkan bahwa responden dengan *Personal Hygiene* Kurang memiliki risiko 1.845 kali lebih besar untuk mengalami dermatitis dibandingkan dengan responden yang memiliki *Personal Hygiene* Baik.

Discussions

Relationship Between Knowledge and Dermatitis Incidence at Nagaswidak Community Health Center

Knowledge represents a fundamental determinant in shaping individual behavioral patterns, and extensive epidemiological literature demonstrates a robust association between knowledge deficits and increased dermatitis susceptibility. The findings from this investigation, involving 130 respondents stratified from four distinct villages within the Nagaswidak Community Health Center catchment area, revealed a statistically significant relationship between inadequate knowledge and dermatitis occurrence. Among respondents with poor knowledge classification, 59 individuals (80.8%) presented with confirmed dermatitis diagnosis, whereas only 24 respondents (42.1%) with adequate knowledge demonstrated comparable disease manifestation. The chi-square statistical test yielded a p -value of 0.000, substantially below the predetermined significance threshold of 0.05, confirming statistical significance of the association. The prevalence ratio calculation indicated that individuals demonstrating poor knowledge exhibited 1.920 times greater risk for dermatitis development compared to their counterparts possessing adequate knowledge regarding disease etiology and prevention mechanisms.

This epidemiological finding aligns concordantly with prior investigations documenting knowledge-disease relationships in dermatological conditions. Research conducted by Selvi Afrida in 2015 documented that individuals exhibiting reduced knowledge levels demonstrated substantially higher non-compliance with preventive dermatitis protocols, with 57.1% failing to implement protective measures for contact dermatitis avoidance. Conversely, among respondents maintaining adequate knowledge levels, only 26.9% exhibited comparable preventive behavior deficiencies. Educational attainment appears to serve as an important modifier of behavioral outcomes through knowledge acquisition pathways. Occupational health literature consistently emphasizes that workers maintaining comprehensive understanding of hazardous chemical characteristics and their health consequences demonstrate markedly improved risk mitigation compared to those with minimal hazard awareness. As emphasized by Ira Sandi Tunny (2022), "knowledge plays a crucial role in shaping individual behavior because good knowledge can lead a person to act positively. When someone understands dermatitis well, they will know how to prevent the disease. Additionally, educational level also influences how easily a person receives and understands information; the higher their educational level, the easier it becomes for them to understand counseling and change their attitudes in daily life." The mechanisms through which knowledge influences dermatitis prevention extend beyond simple awareness; knowledge acquisition facilitates recognition of risk factors, understanding of transmission pathways, and appreciation of consequences associated with inadequate preventive practices. This cognitive foundation enables individuals to prioritize health-protective behaviors amid competing daily demands and environmental pressures. The substantial knowledge-dermatitis relationship documented in this investigation underscores the necessity for comprehensive health education interventions targeting disease etiology, transmission routes, clinical manifestations, and prevention strategies within community populations, particularly among occupational groups demonstrating elevated dermatitis incidence.

Relationship Between Personal Hygiene and Dermatitis Incidence at Nagaswidak Community Health Center

Personal hygiene practices constitute a critical behavioral determinant influencing dermatitis pathogenesis through direct modification of skin integrity and pathogenic exposure pathways. The investigation documented marked disparities in dermatitis prevalence according to hygiene classification categories. Among the 80 respondents demonstrating inadequate personal hygiene practices, 62 individuals (77.5%) presented with dermatitis diagnosis, while 21 respondents (42%) maintaining good hygiene demonstrated disease manifestation. Chi-square statistical analysis revealed a p -value of 0.000, confirming the statistical significance of the hygiene-dermatitis association. The prevalence ratio of 1.845 indicated that individuals exhibiting poor personal hygiene maintained substantially elevated dermatitis risk relative to those maintaining adequate hygiene standards.

The substantial relationship between hygiene deficiencies and dermatitis manifestation reflects underlying mechanistic pathways through which behavioral practices directly influence cutaneous disease pathogenesis. Inadequate personal hygiene facilitates sustained dermatological exposure to irritant and allergenic substances, promotes proliferation of pathogenic microorganisms, and permits cumulative damage to cutaneous barrier function. According to Hidayat (2010) as cited in Jesika and Hilal (2016), *"not maintaining personal hygiene can cause health problems."* Personal hygiene encompasses coordinated behavioral practices maintaining skin cleanliness, including routine bathing with appropriate cleansing agents, hand washing with antimicrobial soap following potential contamination exposure, maintenance of clean nail beds through regular trimming, preservation of textile hygiene through frequent laundering and appropriate drying procedures, and regular hair cleansing. This multidimensional hygiene construct reflects recognition that dermatitis prevention requires consistent attention to multiple anatomical regions and behavioral domains rather than isolated preventive interventions.

From a public health perspective, behavioral epidemiology research indicates that personal hygiene practices demonstrate considerable variability according to educational attainment, health literacy, socioeconomic circumstances, and cultural normative patterns. Saryono and Widiarti (2010) documented that maintenance of adequate personal hygiene substantially reduces microorganism infiltration into physiological systems and consequently minimizes infectious disease transmission risk. As emphasized by Fitria and Hayani (2021), *"maintaining personal hygiene is very important because good hygiene minimizes the opportunity for microorganisms to enter the body and cause disease."* Dermatitis prevention specifically benefits from hygiene maintenance through multiple mechanisms including reduced skin exposure to occupational and environmental irritants, decreased pathogenic bacterial colonization, and optimization of cutaneous barrier function. Price and Wilson (2005) explicitly noted that personal hygiene maintenance effectively prevents cutaneous conditions including dermatitis manifestation. The behavioral basis of hygiene practices encompasses body cleansing through regular bathing, maintenance of cotton or other appropriate absorbent textile materials, regular nail care through clipping and cleaning, meticulous hand hygiene particularly following potential contamination exposure, and systematic skin examination for early disease detection. The comprehensive nature of personal hygiene emphasizes that dermatitis prevention through behavioral modification requires attention to multiple simultaneous practices rather than isolated intervention.

Research documentation indicates that personal hygiene encompasses specific dermatological domains including body cleansing through adequate bathing frequency, selection of appropriate antimicrobial cleansing agents, utilization of personalized soap products avoiding shared bathing materials, meticulous hand and foot hygiene, nail maintenance through regular trimming and cleaning, systematic clothing hygiene including daily change of garments and sun exposure drying, hair cleansing maintenance, and bedding hygiene including regular laundering and sun exposure. Abdurrauf et al. (2024) emphasized that personal hygiene encompasses body cleanliness through bathing, towel cleanliness, nail and hand cleanliness, and comprehensive cleansing of body regions susceptible to dermatitis manifestation. The multiplicity of hygiene practices requiring simultaneous maintenance suggests that dermatitis prevention involves complex behavioral coordination rather than isolated practices, potentially explaining why populations with reduced health awareness or limited educational backgrounds demonstrate elevated dermatitis incidence.

Relationship Between Water Source and Dermatitis Incidence at Nagaswidak Community Health Center

Water source quality and accessibility constitute essential environmental determinants substantially influencing dermatitis epidemiology through their role in personal hygiene implementation feasibility and cutaneous contamination exposure. The investigation examined associations between water source classification and dermatitis manifestation among 130 respondents demonstrating marked disease distribution disparities according to water source category. Among 80 respondents utilizing poor quality water sources, 61 individuals (76.3%) presented with dermatitis diagnosis, whereas 22 respondents (44%) utilizing adequate water sources demonstrated comparable disease manifestation. Chi-square statistical testing confirmed the significance of this association through p-value of 0.000, substantially below the predetermined significance criterion of 0.05. The prevalence ratio calculation indicated that

individuals dependent upon poor water sources maintained 1.733 times elevated dermatitis risk compared to populations utilizing adequate water sources.

Water quality represents a critical environmental determinant of communicable and dermatological disease manifestation, with direct implications for population health status particularly within resource-limited settings. According to standards established through Indonesian Ministry of Health Regulation Number 416/Menkes/PER/IX/1990, water designated as suitable for domestic purposes must satisfy specific quality and quantity criteria encompassing physical, chemical, and microbiological parameters. From a physical perspective, water must demonstrate transparency, absence of coloration, and lack of objectionable odor or taste characteristics. Chemical composition should maintain concentrations of dissolved substances and mineral content below established maximum contaminant levels. Microbiological examination must demonstrate absence of pathogenic organisms capable of human disease transmission. Regarding quantity requirements, adequate daily water provision necessitates approximately 60 liters per individual in rural contexts and 100 to 150 liters per capita daily in urban areas to support optimal health outcomes.

Santoso (2010) characterized water suitable for domestic utilization as demonstrating clarity without discoloration, absence of objectionable odor, and tastelessness. Water represents an indispensable element for human health across diverse applications including consumption, cooking, personal hygiene through bathing, laundry operations, and sanitation maintenance. Contaminated water constitutes a significant vehicle for transmission of diverse communicable diseases presenting substantial public health hazards. As documented by Jesika and Hilal (2016), *"inadequate access to clean water, particularly for personal hygiene purposes, can result in health problems such as skin diseases."* Water quality contamination with pathogenic microorganisms or hazardous chemical substances creates substantial dermatological risks through multiple mechanistic pathways including direct cutaneous exposure during bathing, secondary infection through contaminated water contact, and reactive inflammatory responses to irritant substances present in substandard water.

The epidemiological evidence from this investigation corroborates prior research demonstrating significant associations between water source characteristics and dermatitis manifestation patterns. Ismy (2012) documented significant correlations between contaminated water quality parameters and dermatological disease manifestation, particularly when contaminated river water constitutes the primary source for daily household activities. Research systematically examining this association emphasized that surface water sources including rivers and poorly protected wells present heightened microbiological contamination risks, particularly in regions with inadequate sanitation infrastructure and limited waste treatment capacity. Fattah (2018) emphasized that both cutaneous cleanliness maintenance and environmental sanitation conditions contribute meaningfully to dermatological disease development and progression.

Among the four villages comprising the Nagaswidak Community Health Center catchment area (Desa 11 Ulu, 12 Ulu, 13 Ulu, and 14 Ulu), water source utilization patterns demonstrate considerable heterogeneity reflecting differential infrastructure availability and economic circumstances. Detailed examination of water source characteristics revealed that 61.5% of respondents (80 individuals) utilized water sources classified as poor quality, while 38.5% (50 individuals) accessed adequate water sources. Water source classification encompassed evaluation of specific quality indicators including water clarity, lack of discoloration, absence of odor, sustained water availability throughout daily cycles, and adequacy of water supply to meet daily household requirements estimated at minimum 60 liters per capita daily.

Research by Gadeng et al. (2020) emphasizing that good quality drinking water must satisfy specific quality and quantity criteria from source, noted that water quality characteristics demonstrate substantial variability according to environmental conditions through which water passes and the duration of water transit through geological formations. This research indicates that groundwater and surface water sources demonstrate distinct contamination profiles reflecting their respective hydrogeological settings and vulnerability to anthropogenic contamination sources. The nexus of inadequate water source quality, limited water quantity availability, and restricted access to sanitation facilities creates particularly vulnerable populations within resource-constrained contexts, necessitating coordinated public health interventions addressing water infrastructure improvement, sanitation facility construction, and health promotion activities enhancing water safety awareness.

CONCLUSION

This investigation revealed that knowledge, personal hygiene practices, and water source quality constitute statistically significant determinants of dermatitis incidence among patients attending Nagaswidak Community Health Center in Seberang Ulu II District, Palembang City. The study demonstrated that individuals with inadequate knowledge exhibited 1.920 times greater dermatitis risk compared to those with adequate knowledge, while those demonstrating poor personal hygiene practices faced 1.845 times elevated risk relative to counterparts maintaining good hygiene. Water source quality emerged as a critical environmental determinant, with individuals utilizing poor quality water sources demonstrating 1.733 times higher dermatitis risk than those accessing adequate water sources. These findings provide empirical evidence supporting the multifactorial nature of dermatitis etiology within resource-limited community settings, emphasizing the interconnected contributions of behavioral knowledge, hygiene practices, and environmental sanitation conditions to disease manifestation. The statistical significance of all three variables underscores the necessity for comprehensive, integrated public health interventions addressing individual knowledge deficiencies, behavioral modification of hygiene practices, and environmental water infrastructure improvement simultaneously.

This investigation contained several important limitations requiring consideration in interpreting findings. The cross-sectional study design precluded examination of temporal relationships and causal associations between variables, restricting conclusions to identification of associations. The sample population was confined to individuals seeking healthcare services at Nagaswidak Community Health Center, potentially introducing selection bias as community members with undiagnosed or untreated dermatitis were not captured. Self-reported data regarding knowledge and personal hygiene practices may have been subject to social desirability bias and recall inaccuracy. Future research should employ longitudinal cohort designs examining temporal progression of dermatitis development according to baseline knowledge and hygiene characteristics. Intervention trials implementing targeted health education programs and water infrastructure improvements would strengthen evidence regarding effectiveness of specific preventive strategies. Practical applications of these findings include development of community-based health promotion programs specifically addressing dermatitis knowledge deficits, hygiene practice standardization, and advocacy for improved water supply infrastructure within the catchment area. Healthcare facilities should prioritize dermatitis prevention education integrated into routine clinical encounters, particularly targeting occupational groups demonstrating elevated disease incidence.

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