

ANALYSIS OF ENVIRONMENTAL FACTORS AFFECTING SKIN DISEASES

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Abstract

Skin health has become an increasingly urgent global issue along with rapid environmental changes and modern lifestyles. This literature review aims to analyze the influence of environmental factors on skin diseases, focusing on the identification of relevant environmental risk factors, their mechanisms of influence on skin health, and effective prevention strategies. The method used is a systematic review of scientific articles from databases such as PubMed, ScienceDirect, OpenAlex, and Google Scholar, following the PRISMA stages. The results show that poor environmental sanitation, inadequate personal hygiene, and unhealthy housing conditions contribute to the increasing prevalence of skin diseases, especially among high-risk populations such as workers and children. Interventions focusing on improving sanitation, personal hygiene education, and better housing conditions can reduce the incidence of skin diseases. This study emphasizes the need for a multidisciplinary approach to create a healthy environment that supports clean and healthy living behaviors, as well as more intensive preventive efforts to protect community skin health.

Keywords: Environmental Factors, Skin Diseases

INTRODUCTION

Skin health has become an increasingly urgent global issue in line with rapid environmental changes and modern lifestyles. The rising prevalence of skin diseases not only affects individuals' quality of life but also imposes a significant economic burden on healthcare systems. Therefore, an in-depth analysis of environmental factors contributing to skin diseases, as well as effective prevention and management strategies, is essential to protect public skin health.

Skin and subcutaneous diseases (SSDs) represent one of the most common groups of diseases worldwide and have a substantial impact on human quality of life. According to the Global Burden of Disease (GBD) Study 2021 published in *The Lancet* (2024), skin diseases rank among the leading causes of years lived with disability (YLDs) globally, making a major contribution to the burden of non-fatal morbidity across all age groups and regions. The study reported that, in 2021, skin diseases collectively accounted for approximately 42 million disability-adjusted life years (DALYs) worldwide, marking a significant increase compared with previous years (Vollset et al., 2024).

In Indonesia, skin diseases remain a prominent public health problem, both in primary healthcare facilities and within rural and urban communities. Based on the Global Burden of Disease (GBD) 2021 analysis, Indonesia is classified among countries with a high burden of infectious and inflammatory tropical skin diseases. The most frequently reported skin conditions in Indonesia include dermatitis/eczema, superficial fungal infections (tinea, pityriasis versicolor), scabies, and secondary bacterial infections such as impetigo. A community-based epidemiological study conducted in Sumatra and Java reported a 20–30%

prevalence of skin diseases among examined populations, particularly in areas with high population density and poor sanitation (Prameswari et al., 2023).

According to the latest epidemiological data, skin diseases continue to pose significant public health challenges across various regions of Riau Province. The Riau Provincial Health Profile Report (Riau Provincial Health Office, 2022) indicated that dermatitis, skin infections, and subcutaneous tissue disorders are among the ten most frequently treated diseases in primary healthcare facilities. In Pekanbaru City, for example, 12,424 cases of skin and subcutaneous infections and 9,439 cases of occupational dermatitis were reported in 2020 (Oktari & Riani, 2023).

RESEARCH METHODS

This study employed a systematic literature review approach following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Articles were retrieved from four major databases: PubMed, ScienceDirect, OpenAlex, and Google Scholar. The inclusion criteria consisted of studies published in Indonesian or English between 2020 and 2025 that examined the relationship between environmental factors and skin diseases and were available in full-text form. Non-peer-reviewed articles and studies published outside the specified time frame were excluded from the analysis.

The selection process included article identification, screening based on titles and abstracts, methodological quality assessment, and data extraction. The findings were analyzed narratively, focusing on thematic similarities, study populations, and types of interventions.

RESEARCH RESULTS

A literature review conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework is a systematic approach used to identify, screen, evaluate, and synthesize studies relevant to a specific topic—in this case, the analysis of environmental factors affecting skin diseases. This process involves the identification of the research problem, literature searching using databases such as PubMed and ScienceDirect, screening of articles based on predefined inclusion and exclusion criteria, assessment of methodological quality, and data extraction for subsequent synthesis and analysis (I Wayan Hendrawan et al., 2023).

The main objective of the PRISMA approach is to ensure transparency, minimize bias, and enhance reproducibility throughout the literature review process, thereby producing a comprehensive and reliable summary of evidence that can inform research and guide evidence-based health practices.

Tabel 1. Literatur Review

No	Nama Penulis, Tahun & Judul Artikel	Tujuan Penelitian	Metode Penelitian	Instrument	Hasil Penelitian
1.	Zahtamal, Tuti Restuastuti, Ridha Restila, Yuni Eka Anggraini, & Yusdiana (2022). "Analysis of the Relationship between Environmental Sanitation and Skin Disease Complaints." Journal of Environmental Health of Indonesia.	To determine the relationship between environmental sanitation (including clean water availability, housing conditions, and the presence of disease vectors) and skin disease complaints in the community.	An analytical cross-sectional study with a quantitative approach. Data were collected through interviews, observations, clinical examinations, and dermatologist diagnoses. Data were analyzed using chi-square and multiple logistic regression tests.	Interview questionnaire and observation sheet for environmental sanitation factors, clinical examinations, and dermatologist diagnoses for skin disease complaints.	The results showed that 36.73% of respondents had skin complaints. Significant environmental factors included inadequate ventilation, poor wastewater drainage systems, and the presence of disease vectors (especially insects).
2	Detris Visiadina (year not specified). "Literature Review: The Relationship Between Personal Hygiene and the Incidence of Pityriasis Versicolor Skin Disease."	To describe the relationship between personal hygiene and the incidence of pityriasis versicolor skin disease.	A detailed analysis of the relevant literature examining the relationship between personal hygiene and the incidence of pityriasis versicolor.	Not specifically mentioned, but relevant keywords such as "personal hygiene," "pityriasis versicolor," and "skin diseases" were used.	Pityriasis versicolor is a common superficial fungal infection, particularly in tropical regions. The prevalence of this disease varies across countries and is influenced by factors such as climate, temperature, humidity, and host-related factors. The fungus <i>Malassezia furfur</i> is the primary causative agent and can develop into a pathogenic mycelial form when an imbalance occurs in the interaction between the host and the normal skin flora. The

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					clinical manifestations of pityriasis versicolor involve changes in skin pigmentation, presenting as patches that range from white to light brown or reddish in color. This disease often causes no significant symptoms but may lead to mild itching in some patients.
3	He, Z., Marrone, G., Ou, A., Liu, H., Ma, L., Huang, Y., Li, Y., Sun, L., Bai, Y., Liu, W., Zha, X., & Lu, C. (2020). Faktor-faktor yang memengaruhi kualitas hidup terkait kesehatan pada pasien dengan penyakit kulit: hasil cross-sectional dari 8,789 pasien dengan 16 penyakit kulit.	This study aimed to investigate the overall health-related quality of life (HRQoL) and identify factors associated with severe impairment of HRQoL among patients with 16 different skin diseases.	A cross-sectional study was conducted involving 9,845 patients with skin diseases across nine hospitals in China. HRQoL was assessed using the Chinese version of the Skindex-29, which measures dermatology-specific health across three domains: symptoms, emotions, and functioning. Logistic regression models were used to evaluate the association between severely impaired HRQoL and demographic or clinical characteristics, with adjustments made for different skin diseases.	HRQoL was assessed using the Chinese version of the Skindex-29 questionnaire, which measures three domains: symptoms, emotions, and functioning.	Emotions were identified as the most affected aspect of HRQoL. Comorbid chronic diseases, a duration of three years or more, and higher severity levels were identified as factors associated with severe HRQoL impairment across each Skindex-29 domain and overall. Female gender, age below 45 years, and alcohol consumption were associated with severe impairment in the emotional domain, while lack of exercise and smoking were associated with severe impairment in the

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					symptom and functioning domains, respectively.
4	Podshibyakin, D., Padilo, L., Agoltsov, V., Chernykh, O., Popova, O., Kalabekov, M., & Solotova, N. (2024). Analysis of Environmental Factors Affecting the Seasonal Outbreak of Lumpy Skin Disease and Risk Assessment of Its Spread in Saratovskaya Oblast, Russia.	This study aimed to analyze the influence of natural and anthropogenic environmental factors on the seasonal spread of lumpy skin disease (LSD) and to assess the risk of LSD outbreaks in Saratovskaya Oblast, Russia.	Data on LSD outbreaks and environmental factors during different seasons were collected for the period 2011–2020 across the Balkan Peninsula, the Middle East, and Russia. Risk assessment was conducted using mathematical modeling with general linear regression and maximum entropy analysis	Mathematical modeling using general linear regression and maximum entropy analysis.	Fourteen environmental factors were identified as statistically significant in influencing the spread of LSD. Analysis of the MaxEnt model constructed using the selected factors indicated that the presence of the pathogen was primarily affected by the density of susceptible livestock, the density of water bodies, and the average monthly rainfall level.
5	Zulmeliza Rasyid, Winda Septiani, Yessi Harnani, Nurvi Susanti, & Achmad Riza Bayhaqi (2022). “Determinants of Personal Hygiene and Basic Sanitation in Relation to Skin Diseases (Scabies) at the Modern Al-Kautsar Islamic Boarding School, Pekanbaru, in 2022.”	To determine the relationship between personal hygiene and basic sanitation with skin diseases at the Modern Al-Kautsar Islamic Boarding School, Pekanbaru, in 2022.	This was a quantitative study using a cross-sectional design, with a sample of 87 students.	Observation and questionnaire distribution.	There was a relationship between knowledge of personal hygiene, skin hygiene, nail hygiene (hands and feet), waste management, wastewater drainage systems, and the availability of clean water with the incidence of skin diseases at the Modern Al-Kautsar Islamic Boarding School in Pekanbaru.

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6	Wayan Hendrawan, Deddy Pratama, Dita Kholida Nurlalwani, & Humam Sungkar. "Profile of Skin Diseases in Pediatric Patients Treated at the Dermatology and Venereology Clinic of the West Nusa Tenggara Provincial Hospital, January 2020–June 2023."	To determine the epidemiological statistics of skin diseases in children, providing information on disease prevalence to evaluate the causes of skin disorders and to assist in the efficient prevention and management of pediatric skin diseases.	A descriptive retrospective study based on secondary data obtained from the medical records of pediatric patients aged 0 to 18 years who were treated at the Dermatology and Venereology Clinic of the West Nusa Tenggara Provincial Hospital (NTB) during the period of January 2020 to June 2023.	The medical record data included demographic information (age and gender) as well as diagnoses. The classification of skin diseases was based on the 2021 PERDOSKI (Indonesian Society of Dermatology and Venereology) guidelines, while age grouping followed the classification established by IDAI (Indonesian Pediatric Society).	From the study conducted at the Dermatology and Venereology Clinic of the West Nusa Tenggara Provincial Hospital (NTB) during the period from January 2020 to June 2023, the total number of patient visits was 475, consisting of 448 new patients (94.3%) and 27 returning patients (5.7%). The distribution of pediatric skin patients at the clinic was dominated by males, totaling 282 (59.4%), compared to females, totaling 193 (40.7%). The most common category of skin diseases was infectious diseases with 288 cases (60.6%), followed by dermatological-allergic-immunologic diseases with 89 cases (18.7%), and non-infectious diseases with 59 cases (12.5%). Most skin diseases were caused by infections, primarily parasitic infestations (mainly scabies), fungal infections (mainly

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7	Dini Arista Putri, Widya Ayu Pratiningsih, Inoy Trisnaini, Fetri Vera Girsang, Najma Hoirunnisa, Nurhayati, Revia Najwa Fitriani, Shanti Oktaviandi, & Titin Dwi Aryani (2025). "The Relationship Between Environmental Factors in Wetland Settlements and the Incidence of Skin Disorders."	To analyze the relationship between residential environmental factors—including housing density, physical housing conditions, waste management, water quality, and flood vulnerability—and the incidence of skin disorders in Kertapati District, Palembang City.	The study employed a quantitative design with a cross-sectional approach and used purposive sampling techniques involving 106 respondents living in the wetland areas of Kemas Rindo and Ogan Baru sub-districts.	Data were collected through questionnaires and analyzed using chi-square tests and multiple logistic regression analysis.	pityriasis versicolor), and bacterial infections (mainly impetigo crustosa). The bivariate analysis showed that wall type and floor type were significantly associated with the incidence of skin disorders. The multivariate analysis identified floor type as the dominant factor, followed by ceiling type. The results of this study indicate that residential environmental factors, particularly floor and ceiling types, contribute to the risk of skin disorders.
8	Richetto, J., & Meyer, U. (2021). Epigenetic Modifications in Schizophrenia and Related Disorders: Molecular Scars of Environmental Exposure and Sources of Phenotypic Variability.	This article aims to summarize clinical and preclinical findings on epigenetic changes in schizophrenia and related disease models, as well as to discuss their origins. In addition, it	This article is a literature review that synthesizes clinical and preclinical findings on epigenetic modifications in schizophrenia and related disease models.	This article does not use specific research instruments but instead relies on the synthesis of existing studies.	Recent findings indicate that certain schizophrenia risk loci may influence stochastic variations in gene expression through epigenetic processes. Most epigenetic changes observed in schizophrenia and related disorders can be acquired through environmental factors and may

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		speculates on how these modifications may contribute to the variability of pathological traits and offer potential pathways for new therapeutic approaches			manifest as molecular “scars.” Epigenetic modifications, whether driven by genetic or environmental factors, represent a plausible molecular source of phenotypic heterogeneity and offer promising targets for therapeutic intervention.
9	Isler, M. F., Coates, S. J., & Boos, M. D. (2022). Climate Change, the Skin Microbiome, and Skin Diseases: Implications for an Increasingly Warming World	This article aims to review how a warming world and its associated climate changes—including temperature, humidity, ultraviolet radiation, and air pollution—affect the skin microbiome and, in turn, overall skin health.	This article is a narrative review of existing literature on the effects of climate change on the skin microbiome and skin diseases.	This article does not employ specific research instruments but instead relies on the synthesis of existing studies.	Studies have shown that the skin microbiome is influenced by climatic factors, and these changes can affect the epidemiology and severity of skin disorders, including atopic dermatitis, acne vulgaris, psoriasis, and skin cancer.
10	Lestari, P., & Nugroho, B. (2024). Implementation of Inclusive Education Policies in Senior High	This study aims to describe and analyze the implementation of inclusive education policies in senior high schools (SMA) in	This study employed a qualitative method with a case study approach. Data were collected through in-depth interviews with various stakeholders, including school principals, teachers, students,	The instruments used included interview guidelines, observation sheets, and	The results of the study indicate that the implementation of inclusive education policies in senior high schools in Yogyakarta City still faces several

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	Schools: A Case Study in Yogyakarta City.	Yogyakarta City. The research is motivated by the legal mandate to provide equal education for all children, including those with special needs (students with disabilities).	parents, and inclusive education specialists. In addition, direct observations were conducted in schools to examine the learning processes and interactions among students.	documentation. The interview guidelines were employed to gather information from informants, the observation sheets were used to record field data, and the documentation was utilized to collect relevant secondary data.	challenges, such as a lack of trained human resources, inadequate facilities, and persistent negative stigma toward students with special needs. However, there are also several good practices that can serve as examples, including strong commitment from schools, collaboration with various stakeholders, and innovations in teaching and learning.
11	Authors: Iva Ferček, Liborija Lugović-Mihić, Arjana Tambić-Andrašević, Diana Česić, Ana Gverić Grginić, Iva Bešlić, Marinka Mravak-Stipetić, Iva Mihatov-Štefanović, Ana-Marija Buntić, and Rok Čivljak. Year: 2021 Title: Features of the Skin Microbiota in Common Inflammatory	The purpose of this study is to present the latest knowledge about the characteristics of the skin microbiome in inflammatory skin diseases, considering that therapeutic effects on microbiome imbalances may contribute to the improvement and management of the disease.	The methods used in this study include collecting information about the microbiome, following human genome sequencing, determining its variations, and linking them to diseases. This study emphasizes the analysis of the microbiome's contribution to human health and disease.	The instruments used in this study include molecular methods such as quantitative polymerase chain reaction (PCR), denaturing gradient gel electrophoresis (DGGE), terminal restriction fragment length polymorphism (T-RFLP), and	Research results indicate that there are significant changes in the composition of skin microbiota in various inflammatory skin diseases such as atopic dermatitis, seborrheic dermatitis, psoriasis, acne, and rosacea. This imbalance can affect immune responses and worsen skin conditions. Further research is needed to fully understand the role of the skin microbiome in these diseases

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	Skin Diseases (Gverić, 2021).			sequencing. The most commonly used method today is 16S rRNA gene sequencing.	and to develop more effective treatment strategies.
12	Authors: Nabiha Yusuf, Thomas Haarmann-Stemmann, and Motoki Nakamura. Year: 2022 Title: Editorial: Environment and Skin Cancer (Editorial: Environment and Skin Cancer). (Yusuf et al., 2022)	Identifying risk factors across the skin exposome and their reciprocal interactions, clarifying pathomechanisms, and identifying biomarkers are crucial for the development of new prevention and therapeutic strategies for skin cancer.	This article is an editorial discussing various studies on skin cancer and the factors that influence it. The research methods used in this article are literature review and synthesis of information from various relevant studies.	Since this article is an editorial, no specific instruments were used. This editorial relies on existing information from other research to make points and recommendations.	This editorial highlights the importance of environmental factors in the development of skin cancer, including UV radiation, chemical exposure, and therapeutic agents. The article emphasizes the need for further research to identify biomarkers and develop new prevention and treatment strategies for skin cancer.
13	Authors: T. Gracia-Cazaña, S. González, C. Parrado, Á. Juarranz, Y. Gilaberte Year: 2020 Title: Influence of the Exposome on Skin Cancer (Effect of the Exposome on Skin Cancer) (Zahtamal et al., 2022)	This article aims to review the available evidence on external factors associated with the onset of any type of skin cancer.	This article uses a literature review method to collect and analyze information about external factors that influence the onset of skin cancer.	Since this article is a review, no specific instruments were used. This article relies on existing information from other studies.	This literature review shows that not only well-known factors such as UV and electromagnetic radiation, but also factors like environmental pollution, including air pollution, smoking, and water contamination, can impact skin health and cancer genesis. Some data are still contradictory or unconvincing,

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					and individual susceptibility, determined by the genome itself, along with other genes living with us in the microbiome, must be taken into account.
14	Authors: Magdalena Ciążyńska, Irmina Olejniczak-Staruch, Dorota Sobolewska-Sztychny, Joanna Narbutt, Małgorzata Skibińska, and Aleksandra Lesiak Year: 2021 Title: Ultraviolet Radiation and Chronic Inflammation—Molecules and Mechanisms Involved in Skin Carcinogenesis: A Narrative Review (Olejniczak-Staruch et al., 2021)	This article aims to review the available evidence on external factors associated with the development of any type of skin cancer. This review seeks to comprehensively analyze the available evidence and to understand how chronic inflammation and ultraviolet radiation can lead to skin carcinogenesis.	This article uses a narrative review method.	This article relies on information from other research.	Research results indicate that chronic inflammation is one of the main characteristics of skin cancer caused by UV radiation from the sun and other agents. HIF-1 α , STAT3, NF- κ B, and their gene products, such as cytokines, COX-2, chemokines, and chemokine receptors, play an important role in inflammation and skin carcinogenesis.
15	Authors: Mohammad Fayyad-Kazan, Farah Kobaisi, Ali Nasrallah, Patrick Matarrese, Richard Fitoussi,	The aim of this study is to investigate, using mass spectrometry-based proteomic analysis, the biological	In this study, comparative proteomic analysis was conducted on skin explants after exposure to no stress, UV radiation alone, or UV + BaP.	Mass spectrometry	The research results indicate that several biological processes are dysregulated, among which autophagy appears to experience a

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	Sandrine Bourgoïn-Voillard, Michel Seve, and Walid Rachidi Year: 2023 Title: Effect of Ultraviolet Radiation and Benzo[a]pyrene Co-Exposure on Skin Biology: Autophagy as a Potential Target	functions that are dysregulated in skin explants following combined exposure to ultraviolet (UV) radiation and benzo[a]pyrene (BaP).			significant decline. Additionally, immunohistochemical analysis was conducted to further validate the reduction in autophagy process. Overall, the outcomes of this study provide insights into the biological responses of the skin to combined UV + BaP exposure and highlight autophagy as a potential target that could be considered in the future as a novel candidate for pharmacological intervention under such stress conditions.
16	Authors: Sheikh Ahmad Umar, Naikoo Hussain Shahid, Lone Ahmad Nazir, Malik Ahmad Tanveer, Gupta Divya, Sajida Archoo, Sharma Rai Raghu, and Sheikh Abdullah Tasduq Year: 2021 Title: Pharmacological Activation of Autophagy Restores Cellular	The aim of this study is to investigate the role of autophagy's genoprotective effects in primary human dermal fibroblasts (HDF) exposed to UV-B.	In this study, HDF was irradiated with UV-B and the level of autophagy was increased with a pharmacological activator.	DAAVLIN UVA/UVB Research Irradiation Unit, MTT assay, fluorescence microscopy, TUNEL assay, ELISA assay	The research results showed that UV-B irradiation of HDF disrupts autophagy responses independently of time and intensity. Increasing autophagy levels with pharmacological activators regulates UV-B-induced cellular stress by reducing DNA photo-adduct induction, enhancing DNA repair processes, decreasing oxidative and ER stress

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17	<p>Homeostasis in Ultraviolet-(B)-Induced Skin Photodamage</p> <p>Authors: Sheikh Ahmad Umar, Naikoo Hussain Shahid, Lone Ahmad Nazir, Malik Ahmad Tanveer, Gupta Divya, Sajida Archoo, Sharma Rai Raghu, and Sheikh Abdullah TasduqYear: 2021Title: Pharmacological Activation of Autophagy Restores Cellular Homeostasis in Ultraviolet-(B)-Induced Skin Photodamage</p>	<p>The aim of this study is to investigate the role of autophagy's genoprotective effects in primary human dermal fibroblasts (HDF) exposed to UV-B.</p>	<p>In this study, HDF was irradiated with UV-B and the level of autophagy was increased with a pharmacological activator.</p>	<p>DAAVLIN UVA/UVB Research Irradiation Unit, MTT assay, fluorescence microscopy, TUNEL assay, ELISA assay</p>	<p>responses, and modulating the expression levels of key cell cycle regulatory proteins.</p> <p>The research results showed that UV-B irradiation of HDF disrupts autophagy responses independently of time and intensity. Increasing autophagy levels with pharmacological activators regulates UV-B-induced cellular stress by reducing DNA photo-adduct induction, enhancing DNA repair processes, decreasing oxidative and ER stress responses, and modulating the expression levels of key cell cycle regulatory proteins.</p>
18	<p>Authors: Zhongsong Zhang, Run Tan, Zuanyu Xiong, Yanyan Feng, and Long ChenYear: 2025Title: Dysregulation of autophagy during photoaging reduces oxidative stress and inflammatory damage</p>	<p>This review aims to explore the complex relationship between autophagy and photoaging, highlighting how this cellular recycling process can reduce UV-induced damage.</p>	<p>This article uses a literature review method to synthesize recent advances and propose future research directions; this analysis aims to inspire further investigation into autophagy-based interventions, offering new hope for maintaining skin health in the face of environmental stress.</p>	<p>Since this article is a review, no specific instruments were used.</p>	<p>Research results indicate that autophagy plays an important role in reducing oxidative damage and inflammation caused by UV radiation, and modulation of autophagy offers a promising therapeutic strategy for preventing and treating photoaging.</p>

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	caused by UV(Zhang et al., 2025)				
19	Authors: Jingwen Ma, Yan Teng, Youming Huang, Xiaohua Tao, and Yibin FanYear: 2022Title: Autophagy plays an essential role in ultraviolet radiation-driven skin photoaging.(Ma et al., 2022)	This review will focus on the protective effects of autophagy on skin cells damaged by UV radiation. We hope to draw attention to the significance of autophagy regulation in the prevention and treatment of skin photoaging.	This article uses a literature review method to collect and analyze information on the role of autophagy in skin photoaging.	Since this article is a review, no specific instruments are used. This article relies on existing information from other studies.	Research results indicate that autophagy plays an important role in protecting skin cells from damage caused by UV radiation, and proper regulation of autophagy could be a promising strategy for preventing and treating skin photoaging.
20	Authors: Jingwen Ma, Yan Teng, Youming Huang, Xiaohua Tao, and Yibin FanYear: 2022Title: Autophagy plays an essential role in ultraviolet radiation-driven skin photoaging.(Review, 2024)	This review will focus on the protective effects of autophagy on skin cells damaged by UV radiation. We hope to draw attention to the significance of autophagy regulation in the prevention and treatment of skin photoaging.	This article uses a literature review method to collect and analyze information on the role of autophagy in skin photoaging.	Since this article is a review, no specific instruments were used. This article relies on existing information from other studies.	Research results indicate that autophagy plays an important role in protecting skin cells from damage caused by UV radiation, and proper regulation of autophagy could be a promising strategy for preventing and treating skin photoaging.

DISCUSSION

The study results indicate a strong correlation between environmental conditions and the occurrence of skin diseases. Poor environmental sanitation, inadequate household waste management, and high residential density increase the risk of transmission of infectious skin diseases. In addition, exposure to air pollution and UV radiation also contributes to non-infectious skin conditions such as atopic dermatitis and premature aging.

These findings are consistent with the WHO report (2023), which states that 20–30% of the population in tropical countries experience environmentally related skin diseases. Social factors such as education level and hygiene behavior also play an important role, especially among children and workers. Increasing public education on personal hygiene, providing access to clean water, and vector control can be effective strategies to reduce the incidence of skin diseases. In addition, cross-sector collaboration — involving health, environment, and education — is needed to create an environment that supports clean and healthy living behaviors.

CONCLUSION

Environmental factors have a significant contribution to skin health. Poor environmental sanitation, poor sanitary conditions, low personal hygiene, and unhealthy living environments increase the risk of skin infections. Community-based interventions, such as improving environmental sanitation, personal hygiene education, and housing infrastructure improvement, have been proven effective in reducing the prevalence of skin diseases. A multidisciplinary approach involving healthcare workers, the government, and the community is highly necessary to build a healthy environment and prevent skin disorders in the future. Further research is recommended to explore the causal relationship between environmental factors and the incidence of skin diseases through longitudinal studies and broader epidemiological approaches.

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