The Correlation of Landslide Disaster with Increased Cases of Atopic Dermatitis in Disaster Victims

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ABSTRACT

Background : landslides not only bring physical damage, but also trigger various health problems, including an increase in cases of atopic dermatitis. The post-landslide environment conditions that are humid, dusty, and limited access to clean water in evacuation centers worsen the skin health of the survivors. Exposure to allergens from soil, mold, and disaster stress further increases the risk of skin inflammation.

Objectives : from this literature is to analyze the relationship between landslide disasters and the increase in atopic dermatitis cases through environmental factors and explore the effect of limited sanitation and allergen exposure on the increase in atopic dermatitis cases after landslide disasters.

Methods : this study uses Literature Review with data obtained from the databases Science Direct, Elsevier, Open Exploration, Research Gate, Pubmed, Taylor and Francis, Proquest, and SINTA with a total of 10 national journal articles, 20 international journal articles, and 5 theses.

Result : some studies show that landslides can increase cases of atopic dermatitis due to exposure to dust, mold, poor sanitation, and stress in evacuation camps. Changes in microbiota and the immune system are also implicated in aggravating symptoms, and microbiota manipulation is a suggested therapeutic strategy. Other studies have shown that such an impact does not necessarily take place, especially where quality emergency sanitation and adequate access to health care services exist.

Conclusion : environmental, sanitation, and microbiota factors play a role in the severity of atopic dermatitis, especially in areas affected by landslides. Exposure to dust, mold, and limited clean water in evacuation camps can worsen skin conditions, while post-disaster stress also weakens the immune system, so health, hygiene, and environmental management education is needed for more effective prevention. However, some studies argue that not all landslide events increase atopic dermatitis, especially in regions with adequate emergency sanitation and health services.

Keywords: Landslide, Atopic dermatitis, Skin hygiene, Natural disaster, and Allergen

Introduction

Landslides not only bring physical destruction but also leave behind health impacts that are often overlooked. During the mud and debris, victims must face a new challenge—a surge in cases of atopic dermatitis (DA). The humid post-landslide environment, filled with dust, mold, and other allergens, creates ideal conditions for this skin disease to develop[1]. Coupled with limited access to clean water and health services in evacuation camps, the risk of skin inflammation is increasing[2,3]. In addition, the overcrowding in evacuation centers and the lack of adequate sanitation facilities also add to the causation of skin infections, like exacerbations of DA symptoms among individuals who already have a history of this condition.

Exposure to toxicants in the environment, such as chemical residues from landslides and dust, has been said to heighten the risk of DA[4]. The toxicants irritate the skin, trigger allergies, and impact the balance of the skin microbiota that helps in the maintenance of the epidermis's health. Moreover, changes in the microbiota that occur because of poor sanitation and chronic stress also further augment the immune status of the body and accelerate the worsening of the disease[5,6]. Psychological stress due to homelessness and uncertainty in the future further cause immune system disorders that promote exacerbation of the inflammation of the skin. Here, such people with a predisposition to DA are made even more sensitive to allergens from the environment, and this further increases the symptoms experienced.

Poor hygiene on an individual level, such as poor handwashing, also plays a role in the issue, increasing the prevalence of skin disease among survivors[7]. Lack of clean water makes simple hygiene practices difficult and secondary infection in already inflamed skin more probable. In addition, the use of wet clothes that are not often replaced because of limited resources also helps to facilitate the creation of an auspicious environment for the growth and survival of bacteria and fungi that then worsens the skin condition. These factors show how the

indirect impact of landslides can contribute to the increase in DA cases in disaster-affected areas[8].

However, not all studies agree that landslides contribute to increased DA cases. Several studies have shown that regions with good emergency response systems, adequate sanitation, and quick access to medical services are able to suppress this surge in cases[9,10]. Areas that have the readiness to provide clean water facilities, distribution of hygiene equipment, and health education for refugees tend to be able to reduce the risk of skin diseases arising from the post-disaster environment. With the right intervention, the impact on skin health can be minimized, even if the victim remains vulnerable[11].

With these differences of view, this study aims to analyze the relationship between landslides and the increase in DA cases among disaster victims. By examining the influence of environmental factors, sanitation, and the body's immune response, it is hoped that this study can provide insight into preventive measures and more effective management strategies to reduce the dermatological impact of landslides. The findings of this study can also be the basis for planning disaster mitigation policies that pay more attention to skin health aspects so that the risk of diseases due to disasters can be reduced more optimally.

Subject Matter

1. What is the relationship between landslides and an increase in cases of atopic dermatitis through environmental factors?
2. How do sanitation limitations and allergen exposure affect the increase in atopic dermatitis cases after landslides?

Research Methods

In writing this article, the literature review method is used. The literature search was carried out using the main keywords, namely "landslide", "atopic dermatitis", "skin hygiene", and "sand allergy". Sources of literature are searched in two languages, namely English and Indonesian, according to the research topic. There were also searches conducted using various academic databases like Science Direct, Elsevier, Open Exploration, Research Gate, PubMed, Taylor and Francis, ProQuest, and SINTA. In an effort to keep the data as current and valid as possible, the selected articles have the most recent publication within five years from 2021 to 2025. In addition, only open access or unpaid journals are used in this study so that they can be accessed easily and transparently.

The search for national journals indexed by SINTA was carried out through the official SINTA website of the Ministry of Education, Culture, Research, and Technology (Kemendikbud). Of the total 10 national journals needed, only 7 journals were found directly through the SINTA website. To meet the needs of literature, 3 other national journals were searched through Google Scholar. Meanwhile, searches for international journals are carried out in each of the databases mentioned earlier. From each site, approximately 300 journals were found relevant to the research topic. Furthermore, a strict selection is carried out by considering the relevance of the content, research methods, and suitability with the main topic. From this selection process, about 1 to 2 journals from each database were obtained that best describe the issues discussed in this article.

In addition to journals, searches also include sources from academic theses. Thesis searches are conducted through the ProQuest database, where each keyword used generates only one thesis that is truly relevant to the research topic. Therefore, to meet the need for the required number of theses, an additional search is conducted through Google Scholar. The search results on Google Scholar show about 125 theses, which are then filtered and selected according to the number that is still needed. With this method, a total of 5 theses were obtained that can support the analysis in this study.

Through this systematic search method, 10 national journals, 20 international journals, and 5 theses were obtained summarized in the form of tabulation. The selected literature is expected to provide a strong scientific basis in analyzing the relationship between landslide disasters and the increase in atopic dermatitis cases through environmental factors, as well as the impact of sanitation limitations and allergen exposure on the increase in these cases.

Table 1. Tabulation of National Journal Analysis

Journal	Author/ Year	Number, Journal Volume	Research Objectives	Method	Research Results
Dampak pertambangan pasir terhadap kesehatan masyarakat di Desa Bao-Bao Kecamatan	Lisnawati, Nofitasari A, Yusnayanti C, Masriwa	No. 2, Volume 4	Knowing the impact sand mining for public health in Bao-Bao Village,	Analytical descriptive approach	There are several diseases suffered by the village community Bao-Bao is that there are 27 people (31.8%) of the community who

Sampara Kabupaten Konawe Sulawesi Tenggara	ti S, Nawawi N. (2023)		Sampara District.		suffer from Tract Infections Acute Respiratory Syndrome (ARI), and 13 respondents (15.3%) suffered from Dermatitis and had diarrhea as many as 45 people (52.9%) so it can be concluded that sand mining can causing health problems in the community.
Evaluasi dampak banjir pada kesehatan masyarakat di Kelurahan Krapyak Kota Pekalongan	Christian RK, Hendrasarie N, Ali M. (2023)	No. 2, Vol. 4	Evaluating the impact of flooding on public health in Krapyak Village, Pekalongan City.	Quantitative descriptive	The correlation value between the number of people affected by the flood and the number of post-flood disease complaints is 0.887, which means that there is a relationship between the number of people affected by the flood and the number of post-flood disease complaints.
Analisis determinan rumah sehat dalam mendukung pembangunan berwawasan lingkungan di Kelurahan Kebun	Suwita, Syafri M, Fahri S. (2023)	-	Knowing overview and what factors affect a healthy home and strategies for	Quantitative and qualitative research	Only 40% of houses in Kebun Handil Village are healthy, below the Jambi target of 62%. The main factors include income, knowledge, land, and moisture. The solution

Handil Kota Jambi			Managing Healthy Homes in Supporting Environmentally Friendly Development in Handil Garden Village, Jambi City.		is coaching through STBM and PHBS, as well as increasing coordination and community participation.
Analysis of wound etiology on floods and landslides disasters in Manado City	Ratuliu G, Geneo M, Tiwatu FV. (2023)	No. 1, Vol. 12	Knowing the factors that cause injuries in floods and landslides that occurred in January-February 2021 in Manado City.	Quantitative descriptive with non-probability sampling techniques	The majority of respondents were elderly men who were at home during the disaster. The most injuries are caused by flood water irritation. There was no significant association between age and location with the incidence of injuries, but men were more at risk. Disaster education is advised to prevent injuries.
Hubungan personal hygiene dengan keluhan gangguan kulit pada petugas pengangkut sampah	Maksum TS, Sahari RM. (2023)	No. 1, Vol. 2	Analyzing the relationship between personal hygiene and complaints of skin disorders in garbage transport	Observational analysis with cross sectional study design	As many as 66.2% of respondents had poor personal hygiene, and 60.8% had skin disorders. There was a significant relationship between personal hygiene and skin disorders (p=0.018).

			officers in Gorontalo City.		
Sistem informasi geografis pelaporan bencana berbasis web	Santoso B, Abadi F, Oktavia ni R, Setiawa n D. (2023)	No. 2, Vol. 3	Mapping natural disaster-prone areas and displaying comparative statistics on the number of natural disasters in Riau Pekanbaru.	Black-box Testing	Functional system can function properly.
Analisis manajemen risiko dan pengendalian kesehatan dan keselamatan kerja (K3) pada pekerjaan power house (studi kasus proyek PLTMH Cikandang 1 Pakenjeng-Garut).	Tamim F, Ismail A.	-	Gaining greater effectiveness and efficiency.	Risk assessment matrix sourced from AS/NZS 4360: 2004.	Risk calculations sort the values from largest to smallest for control. 9 high-risk variables, 20 medium-risk, and 6 low-risk variables were obtained.
Identifikasi dan penilaian risiko sistem kesehatan, keselamatan kerja dan lingkungan pada pembangunan apartemen	Hakim AR. (2022)	No. 3, Vol. 7	Identifying and assess safety, health, and environmental risks in apartment development projects.	Risk assessment -ment matrix derived from the Regulation of the Minister of	The highest risk is that workers fall when disassembling scaffolding (index 12.6), while the lowest is exposure to dust when lifting materials with tower cranes (index 5.94).

				Public Works and Public Housing Number 10 of 2021	
Resiliensi masyarakat dan penyuluhan pasca banjir di Kecamatan Masamba Kabupaten Luwu Utara.	Hakim L, Setiawati B, Hawing H, Lestari I. (2023)	No. 2, Vol. 19	Identifying community resilience and post-flood counseling, as well as drivers and inhibitors of community resilience in Masamba District, North Luwu Regency.	Qualitative approach with descriptive type	Community resilience after floods is supported by social support, personal strengthening, and capacity building to face problems. The main factors are public and social support. Entrepreneurship education and training can increase knowledge and skills to encourage independent businesses.
Kegiatan pembersihan selokan untuk menjaga kenyamanan masyarakat di Desa Bulukagung Klampis Bangkalan.	Mahfud, Masnawati E. (2025)	No. 1, Vol. 1	Discussing efforts to clean sewers in Bulukagung Village, Klampis, Bangkalan, as part of environmental management involving the community.	Participatory Action Research (PAR)	This program succeeded in cleaning sewers, smoothing water flow, and raising public awareness of cleanliness. In addition to solving technical problems, this program also encourages behavior change and strengthens cooperation, and can be applied in other villages as an

					environmental management solution.

Table 2. Tabulation of International Journal Analysis

Journal	Author/Year	Number, Journal Volume	Research Objectives	Method	Research Results
He Kāinga Oranga: reflections on 25 years of measuring the improved health, wellbeing and sustainability of healthier housing	Howden-Chapman P, Crane J, Keall M, Pierse N, Baker MG, Cunningham C, et al. (2024)	No. 3, Vol. 54	Reflecting on the impact of He Kāinga Oranga/Housing and Health Research Programme on housing and health policy in Aotearoa and internationally.	Randomised control trials	The findings support government policies and are included in the WHO Housing and Health Guidelines, and contribute to the establishment of the program as a WHO Collaborating Centre.
Climate change and health: the opportunity for oral health professionals to be champions of sustainability	Neale A, Field JK, Fleige S. (2024)	No. 1, Vol. 52	Providing recommendations to health professionals to reduce the impact of the health sector on climate change through sustainable practices.	Identification	The health sector accounts for 8.5% of U.S. greenhouse gas emissions and 4% of global carbon emissions, with recommendations to reduce environmental impact.
Updated assessment	Schulte PA, Jacklitsch	No. 5-6, Vol. 20	Updating the framework and	Literature search with a	Seven categories of occupational hazards are

of occupational safety and health hazards of climate change	BL, Bhattacharya A, Chun H, Edwards N, Elliott KC, et al. (2023)		raising awareness about the impact of climate change on occupational safety and health and addressing environmental temperatures, biological hazards, and extreme weather, but less about air pollution, UV radiation, industrial transitions, and the built environment.	horizon scanning approach to update research related to the impact of climate change on workers during the period 2014–2021	such as climate change, with outdoor workers as the most affected group. Research and control measures are lacking, while issues such as mental health and equity also need attention.
Climate change, families, and human development: review of the evidence	Cuartas J, Ramírez-Varela L, Spitzer J, Brieant A, Ghazanfar A, Lansford JE, et al. (2025)	-	Reviewing the impact of climate change on families, including health, child development, and the functioning of the family system.	Rapid reviews	There is evidence of the impact of climate change on physical and mental health, child development, and family systems, including early marriage, migration, and parenting patterns. There are gaps in the literature that need to be addressed for future research and policy.

The evolving therapeutic landscape in atopic dermatitis	Hernández-Zárate LA, Gómez-Núñez CA, Narváez-Labuhn S, Morales-Velázquez G, González-Uribe V. (2025)	Vol. 3	Review the current understanding of the pathophysiology of atopic dermatitis (AD) and the development of new therapies to manage the condition.	Review	Biological therapies have shown effectiveness in reducing inflammation and itching, but challenges include the risk of hypersensitivity and high cost. Precision medicine is expected to improve patient outcomes.
Radionuclides distribution and radiation hazards assessment of black sand separation plant's minerals: a case study	Nabil IM, El-Samrah MG, El Sayed AF, Shazly A, Omar A. (2024)	Vol. 14	Assessing levels of radioactivity and associated risks in products separated from black sand in the Delta, Egypt.	Sampling and analysis using HPGe p-type detectors	The samples of rutile, zircon, and monazite have the highest radioactivity, with a radiological hazard index higher than the world average limit. These results indicate potential risks to human health and the environment, and require mitigation measures to protect workers, following safety guidelines set by the IAEA and ICRP.
Atopic dermatitis in adults:	Ibekwe PU, Ekop E, Otu T, Bassi P,	Vol. 2	Presenting the frequency, clinical	Prospective study using PO-	Of the 2,177 patients, 38 adults were diagnosed with AD, two-thirds of

prevalence, clinical pattern, and contact sensitizatio n	Ukonu BA. (2024)		patterns, and sensitization of contacts in adults with atopic dermatitis (AD).	SCORAD index and sensitivity testing.	whom had adult-onset AD. The majority (63.2%) have chronic eczema, and 68.8% are sensitive to at least one allergen. Contact sensitivity to methyldibromoglutaroni trile, lanolin, and parabens is particularly noticeable.
Efficacy and safety of upadacitini b versus dupilumab in adults and adolescents with moderate-to-severe atopic dermatitis: week 16 results of an open-label randomized efficacy assessor-blinded head-to-head phase IIIb/IV	Silverberg JI, Bunick CG, Hong HC, Mendes-Bastos P, Stein Gold L, Costanzo A, et al. (2025)	No. 1, Vol. 192	To assess the efficacy and safety of once-daily upadacitinib (UPA), initiated at 15 mg and dose-escalated to 30 mg based on clinical response, compared with dupilumab (DUPI) as per its label, and present the week 16 primary analysis results.	The Level Up study randomized AD patients to UPA or DUPI for 16 weeks. UPA dosage started at 15 mg, increasing to 30 mg if needed. The primary endpoint was EASI 90 and WP-NRS 0/1 at week 16, with secondary endpoints on skin and itch responses. Safety was monitored.	Superior efficacy in achieving simultaneous EASI 90 and WP-NRS 0/1 response at week 16 was demonstrated with UPA vs. DUPI (19.9% vs 8.9%, respectively; $P < 0.001$). UPA showed superiority over DUPI for all ranked secondary endpoints, with post hoc analyses exhibiting higher itch response rates as early as day 2. No new safety signals were identified in this period.

study (Level Up)					
The global burden of atopic dermatitis: lessons from the Global Burden of Disease Study 1990–2017	Laughter MR, Maymone MBC, Mashayekhi S, Arents BWM, Karimkhani C, Langan SM, et al. (2021)	Vol. 184	Presenting the burden estimates for atopic dermatitis (AD), including data from inception of the GBD project in 1990 until 2017.	GBD Study	Atopic dermatitis (AD) ranks 15th in nonfatal diseases, with the highest disease burden among skin diseases. The global DALY rate for AD was 121 in 1990 and 123 in 2017. The highest DALY rates were in Sweden (327), the UK (284), and Iceland (277), while the lowest were in Uzbekistan, Armenia, and Tajikistan (85).
Sustainable bamboo: technological innovations and patent insights for a greener future	Patel HR, Mathakia R, Mangroliya UC, Mandaliya VB. (2025)	Vol. 10	Provides a comprehensive review by patent regarding bamboo in four key sectors: food, commercial, construction, and the environment.	Patent landscape analysis using Patentscope, Scopus Patents, Google Patents, and Lens databases	Innovations in the food, commercial, construction, and environmental sectors, such as vacuum packaging, bamboo fiber processing, bamboo composite materials, and large-scale planting techniques, improve the quality and sustainability of bamboo, and support the achievement of the Sustainable Development Goals (SDGs).
Geochemistry and mineralogy of muds	Palmisano M, Balassone G, Maggi S, Arenas AA,	Vol. 235	Assess the potential therapeutic value of mud	Geochemical, mineralological, and	Sludge contains quartz, phyllosilicates, feldspar, carbonates, and amorphous components,

and thermal waters from mud volcanoes in the NW Caribbean Coast of Colombia and their potential for pelotherapy	Guerra IMB, Valero LEC, et al. (2025)		and hot water released by mud mountains on the northwest Caribbean coast of Colombia through geochemical and mineralogical analysis.	granulometri c analysis	and has very low levels of contaminants. Muds and hot springs from these mud mountains show potential therapeutic value, but more research is needed to confirm the mechanism of their use in medical practice.
Exposure to isocyanates predicts atopic dermatitis prevalence and disrupts therapeutic pathways in commensal bacteria	Zeldin J, Chaudhary PP, Spathies J, Yadav M, D'Souza BN, Alishahedani ME, et al. (2023)	No. 1, Vol. 9	Investigating the relationship between microbial dysbiosis and atopic dermatitis (AD), as well as the impact of diisocyanates on protective lipid production and therapy with *Roseomonas mucosa*.	Screening basis data EPA	Diisocyanates have been shown to be strong predictors of AD and interfere with the production of protective lipids. Although topical therapy with R. mucosa did not meet commercial endpoints, the subgroup that completed the protocol showed significant clinical improvement.
Sand injuries associated with the landslide	Hata M, Ichiba T, Okazaki Y. (2025)	Vol. 13	Analyzing sand injuries associated with landslides.	Identification	This study provides an understanding of the types of injuries and impacts arising from

					interactions with sand on landslide disasters.
Landslide disasters in eastern Uganda: post-traumatic stress disorder and its correlates among survivors in Bududa district	Kabunga A, Okalo P, Nalwoga V, Apili B. (2022)	No. 287, Vol. 10	Assessing the prevalence and correlates of post-traumatic stress disorder among Bududa landslide survivors.	A community-based cross-sectional study	Of the participants, 276 (46.8%) had PTSD symptoms. Factors associated with higher PTSD likelihood included male gender (AOR: 0.47), widowhood (AOR: 0.44), lack of counseling (AOR: 0.44), and longer duration since the landslide (AOR: 0.35).
Worldwide research trends in landslide science	Carrión-Mero P, Montalván-Burbano N, Morante-Carballo F, Quesada-Román A, Apolo-Masache B. (2021)	Vol. 18	Analyze bibliometrics on the types of landslides emphasized by the USGS, as well as their relationship to various scientific fields and scientific trends.	SCOPUS database and VOSviewer software	Research on landslides is growing rapidly, with a focus on stabilization, prevention, and categorization techniques of vulnerable slope sectors.
On mitigation of earthquake and landslide hazards in the eastern	Bansal BK, Verma M, Gupta AK, Prasath RA. (2022)	No. 1079-1102, Vol. 114	Highlight efforts to mitigate geological hazards, especially earthquakes and landslides,	Hazard mapping with geotechnical treatment, design of vital infrastructure	Government initiatives in the eastern Himalayan region have successfully identified vulnerable areas and improved understanding of the earth's crust structure, geodynamics, tectonics,

Himalayan region			in the eastern Himalayan region, through the application of science and engineering.	facilities, and awareness raising at the local level	seismogenesis, and soil properties.
Unraveling the gut-skin axis in atopic dermatitis: exploiting insights for therapeutic strategies	Rios-Carlos M, Cervantes-García D, Córdova-Dávalos LE, Bermúdez-Humarán LG, Salinas E. (2024)	No. 1, Vol. 16	Examine the influence of metabolites produced by the gut microbiota on the development of atopic dermatitis (AD).	Examining the role of probiotics and prebiotics and promoting the production of bacterial metabolites	Metabolites from the gut microbiota help regulate the overactive immune response in AD and directly affect keratinocytes. Probiotics also lower the metabolites associated with the onset of AD, opening up the possibility of new therapeutic strategies through manipulation of the gut microbiome to improve the quality of life of AD patients.
Topical prebiotics/postbiotics and PRURISCORE validation in atopic dermatitis	Gelmetti C, Rigoni C, Cantù AM. (2022)	No. 1, Vol. 34	Investigating the efficacy and tolerability of a cream (Rilastil Xerolact PB) containing a mixture of prebiotics and postbiotics, and to validate the PRURISCOR	The study is based on 396 subjects of both sexes in three age groups (i.e., infants, children, adults) suffering from mild/moderate Atopic Dermatitis,	The product demonstrated good efficacy combined with good/very good tolerability in all age groups. SCORAD, PRURISCORE and IGA scores decreased significantly over the course of the study. The PRURISCORE was preferred to VAS by most patients.

			E itch scale in the management of atopic dermatitis.	recruited from 8 European countries and followed for 3 months.	
Skin care interventions in infants for preventing eczema and food allergy	Kelleher MM, Cro S, Cornelius V, Lodrup Carlsen KC, Skjerven HO, Rehbinder EM, et al. (2021)	No. 2	To assess eKects of skin care interventions, such as emollients, for primary prevention of eczema and food allergy in infants To identify features of study populations such as age, hereditary risk, and adherence to interventions that are associated with the greatest treatment benefit or harm for both eczema and food allergy.	Basis data Cochrane, CENTRAL, MEDLINE, Embase, serta daftar percobaan dan referensi terkait hingga Juli 2020, dan menghubungi ahli	Dari 33 RCT dengan 25.827 peserta, perawatan kulit bayi tidak mengubah risiko eksim atau alergi makanan pada usia 1-2 tahun. Namun, intervensi meningkatkan risiko reaksi alergi terhadap makanan dan infeksi kulit. Efeknya tidak dipengaruhi oleh usia, durasi intervensi, atau faktor risiko.

Hand hygiene and hand eczema: a systematic review and meta-analysis	Loh EDW, Yew YW. (2022)	-	Assess the risk of hand eczema related to hand hygiene, including frequency of hand washing, water use, and alcohol hand rubs.	Systematic review and meta-analysis of cohort, case-control, and cross-cut studies	Washing hands 8–10 times a day increases the risk of hand eczema (RR 1.51). The risk increased further with the frequency of hand washing 15–20 times a day (RR 1.66). The use of alcohol-based hand sanitizers is not significantly associated with the risk of hand eczema.

Table 3. Tabulating Thesis Analysis

Journal	Author/ Year	Number, Journal Volume	Research Objectives	Method	Research Results
Effects of Dietary and Environmental Exposures on Infant Immune Development	Pizzarello CR. (2023)	-	Examining the effect of breast milk (HM) and agricultural lifestyle on the immune function of intestinal epithelial cells (IEC) and helper T cells (Th) in infants.	Colon cancer cell lines (Caco-2) and flow cytometry	HM enhances the production of inflammatory chemokines and the regulation of NF-κB transcription on Caco-2, suggesting the effect of HM on the TLR4 pathway. A population of newly activated Th2B cells was found in infants at high risk of allergies who developed AD and FA. This population produced Th2 cytokines.
Disaster Governance for Community	Silva FP. (2024)	-	Researching disaster governance to improve	Case study approach	Providing insight into how disaster governance can improve community resilience to natural

Resilience: The Landslide Case in Kantagnos, Philippines			community resilience, with a focus on the case of landslides in Kantagnos, Philippines.		disasters, as well as identifying challenges and solutions in disaster management in Kantagnos.
Presence, Power and Performance: The Paleoethnomedicine of Healers and Healing in Svealand Between 600-1200 AD	Dwyer RA. (2025)	-	Researching the use of medicinal plants in the Svea region between 600-1200 AD, as well as understanding the role of healers in the Svear community.	Macroflora analysis using performance theory	It shows that healers are of high status and use the same pharmacopoeia throughout the pagan era. With the entry of Christian monasteries, healers, especially women, adopted medicinal plants from the continent and integrated them in healing practices with the influence of the church.
Damp Skin: Portraits of Taiwanese Domesticity, Resilience, and Otherness	Chan C-H. (2024)	-	Researching domestic life in Taiwan through the concept of humidity and failing space restrictions.	Analysis of history, memory, and climate context through three frameworks: houses, bodies, and architecture	Demonstrate the complexity of Taiwanese identity, resilience, and cultural adaptation related to domestic space and external influences.
Environmental Impact of Landslide In Cox's Bazar.	Rashid H, Begum F.	-	Assess the impact of landslides on the environment and communities, as well as factors that contribute to	Analysis of settlement patterns, road networks, utility facilities, socio-	Demonstrate the impact of landslides on topography, ecosystems, and human quality of life, and provide information for future risk mitigation.

	landslides in the Cox's Bazar area.	economic conditions, and landslide-causing factors

Results And Discussion

Atopic dermatitis (AD) is a multifactorial disease of the skin, and the latest trends in the increase in its prevalence show that environmental factors are a significant causative factor. Landslides are large-scale environmental events with the capability of destabilizing ecosystems and altering exposure to irritants and allergens[12]. Redistribution of outdoor allergens such as dust mites, pollen, and molds following a landslide heightens exposure among the vulnerable to AD. Landslides also destroy sanitation facilities, such that it becomes extremely difficult to get access to clean water and sanitation, and further complicates skin disease. Unhygienic conditions encourage breakdown of the skin barrier, further sensitizing the skin to irritants and infection, and more exposure to allergens triggering or worsening eczema attacks. These blend to supply an environment which could well become a significant causative factor for rising atopic dermatitis disease in populations thus affected.

It has been the subject of various researches on environmental and health impacts of landslide disaster, and this could be attributed to an increase in the incidence of atopic dermatitis resulting from various environmental factors. An assessment of the environmental impact of the landslide in Cox's Bazar, such as air and water contamination, and increased pollution and soil contamination that can generate increased levels of exposure to allergens and irritants among the affected communities. These alterations can aggravate or trigger skin conditions such as atopic dermatitis, especially in subjects that possess pre-existing allergic predispositions[13]. Research on the impact of landslides on post-traumatic stress disorder (PTSD) among survivors in Uganda suggests that psychological conditions such as post-disaster stress and anxiety could affect the immune system and may worsen inflammation of the skin, for example, atopic dermatitis[11]. Similarly, the etiology study of injury caused by floods and landslides in Manado City, owing to low hygiene and sanitation in the affected areas. Inadequate sanitation after a landslide, like restricted access to clean water and proper sanitation facilities, can increase the risk of skin infection apart from causing inflammatory response that exacerbates atopic dermatitis[14].

Besides, consider the worldwide landslide science research trends that show that the phenomenon impacts soil stability as well as public health through drastic environmental changes[15]. In mitigation from disasters, considering steps to limit the possibility of earthquakes and landslides occurring in the eastern Himalayas and which can prevent environmental and health impacts caused by landslides[12]. Meanwhile, studies on sand injuries caused by landslides are also used in understanding how fine particles scattered in the air by landslides can become irritants to the skin and respiratory tract that can ultimately become worse for atopic dermatitis[16]. Hence, a mixture of sanitation limitations, increased allergen exposure via environmental modifications, and the psychologic impact of landslides can be the main causes for the increase in atopic dermatitis cases among the affected populations[17].

The impact of environmental and hygiene factors on the incidence of atopic dermatitis has been a concern in various studies. The discovery that personal hygiene plays a role in the emergence of skin disorders in garbage haulers shows that individual hygiene affects skin health[18]. A systematic review and meta-analysis also identified an association between hand hygiene and hand eczema, which confirms the importance of sanitation in preventing skin disorders[7,19]. Meanwhile, report that skin care interventions in infants may reduce the risk of eczema and food allergies, highlighting the role of early exposure to allergens on the development of atopic dermatitis[13,20]. The results of this study support the understanding of the impact of sanitation limitations and allergen exposure on the increase in cases of atopic dermatitis after landslides.

Environmental factors play an important role in the increasing prevalence of atopic dermatitis, especially after landslides which result in air pollution, disruption of sanitation, and increased allergen exposure. Exposure to isocyanate from industrial pollutants emitted by landslides has been associated with changes in skin microbiota and increased prevalence of atopic dermatitis[21]. In addition, disturbances in the 'gut-skin axis' due to environmental changes can worsen the inflammatory response, thus becoming a new therapeutic approach in the management of atopic dermatitis[5,22]. Sanitation limitations after a disaster also increased exposure to environmental allergens and irritants that worsened clinical patterns as well as contact sensitization of atopic dermatitis[14]. Global studies show that environmental factors significantly affect the burden of atopic dermatitis in different populations, highlighting the role of pollution and climate change in the incidence of this disease[23].

As the understanding of environmental impacts on atopic dermatitis increases, a variety of new therapeutic approaches continue to be developed. Therapeutic innovations include biological drugs, immunomodulators, and topical prebiotics and postbiotics that have been

validated using PRURISCORE to regulate inflammation and boost the skin microbiota[6,16]. Pharmacologically, efficacy and safety comparison of treatments such as upadacitinib and dupilumab is a key aspect in the treatment of atopic dermatitis induced by environmental factors[17]. Elaboration of the interaction between natural disasters and atopic dermatitis is hence essential in coming up with more effective prevention and treatment procedures[24].

The climate change contributes to various aspects of health, including the disease risk due to environmental determinants. Highlighting the contribution of dental medical personnel in adapting to the impacts of climate change on health, which reflects the role of the health sector in addressing the environmental crisis[12]. Reconsider then occupational safety and health risks exacerbated by climate change, including allergen exposure and deteriorating environmental conditions[13]. In addition, the study of the impact of climate change on families and human development, which is relevant in understanding the relationship between disasters such as landslides, sanitation limitations, and allergen exposure that can trigger an increase in cases of atopic dermatitis[14].

Environmental change due to landslides may affect the health of skin through diseases like exacerbation of atopic dermatitis case occurrences through channels like poor sanitation and allergen contact. It highlights the priority of improvement in domestic condition to an improvement in well-being and health, pertinent when discussing in terms of post-disaster sanitation[11,25]. Then, the discussion of radionuclide distribution and radiation hazards from black sand, which can be a source of risky environmental exposure for sensitive skin[16]. Meanwhile, research related to the geochemical content of mud and hot water, which has the potential to affect skin health, both through direct exposure and utilization in therapy[18].

Research on risk management and community resilience in disaster response shows that effective governance can reduce the health impacts of natural disasters, including an increase in cases of atopic dermatitis triggered by environmental factors. Research on disaster management in the case of landslides in Kantagnos, Philippines, can improve community resilience[26]. Meanwhile, a discussion on community resilience and post-flood counseling in North Luwu Regency, which is related to efforts to reduce allergen exposure and improve sanitation conditions[27]. In addition, the developed web-based geographic information system supports disaster reporting more effectively, allowing for a faster response to environmental health impacts[15]. On the other hand, highlighting the importance of risk identification and assessment in health, occupational safety, and environmental systems in construction projects, which can help understand the health risks due to post-disaster environmental exposures[28]. Thus, sanitation limitations and increased exposure to allergens after landslides can contribute

to an increase in cases of atopic dermatitis, so a more comprehensive mitigation system is needed.

Lifestyle and environmental exposure have a highly significant role to play in the development of the baby's immune system, especially in the case of the high prevalence of atopic dermatitis after landslide catastrophes[29]. Emphasizes regarding environmental elements, for example, contact with allergens by air, diet, or contact with certain surfaces, may have a significant impact on the immune response of the baby, both in growing tolerance and generating stronger allergic reactions[30]. Additionally, perpetual sanitation limitation resulting from landslides leads to a greater level of exposure to various allergens and pathogens that can aggravate the skin condition of babies afflicted with atopic dermatitis. Research on the impact of environmental activities, such as sand mining, on public health, shows that environmental changes can have a negative impact on individual skin health and immune systems[31].

Evaluation of the impact of floods on public health in Krapyak Village, Pekalongan City, which can provide insight into how natural disasters, including landslides, contribute to an increase in atopic dermatitis cases through environmental factors such as increased humidity, fungal growth, and higher exposure to allergens[2]. Then, the research on the determinants of healthy houses in supporting environmentally sound development in Kebun Handil Village, Jambi City, which is relevant in the context of limited sanitation due to disasters and how unsuitable housing conditions can worsen exposure to allergens that trigger atopic dermatitis[24]. The discussion of sewer cleaning activities carried out in Bulukagung Village, Klampis, Bangkalan, which highlighted the importance of environmental management in maintaining community comfort, including in reducing health risks due to the accumulation of organic waste and pathogenic microorganisms that can trigger allergic reactions and skin irritation after landslides[28].

Disaster-disrupted environments, such as landslides, can trigger a variety of health problems, including increasing cases of atopic dermatitis such as highlighting risk management and occupational health and safety control in infrastructure projects, related to landslide impact mitigation[25]. The research on sustainable bamboo technology innovation, which has the potential to help improve sanitation in affected areas[30]. Then, a discussion of healing practices in paleoetnomedicine, provides insight into traditional treatment for skin diseases caused by post-disaster allergen exposure[32]. Meanwhile, the study of domestic life resilience to environmental moisture, which may contribute to the increase in cases of atopic dermatitis after landslides[33].

However, although there is evidence showing an increase in skin problems due to landslide disasters, some studies oppose the claim that landslides are directly related to an increased prevalence of atopic dermatitis (DA). While landslides can damage the environment and increase the risk of exposure to allergens, not all areas affected by landslides have experienced a significant spike in DA cases. In some regions, despite infrastructure and environmental damage, mitigation efforts through prompt medical care and improved post-disaster sanitation can help reduce negative impacts on skin health[1,34]. For example, some studies show that after natural disasters, with better sanitation and proper skin treatment, communities can recover from the effects without significantly increasing the prevalence of DA[7,16,35]. In addition, further research suggests that while the post-disaster environment can indeed worsen DA symptoms, other factors such as diet, individual hygiene, and genetics also play a major role in influencing the development of DA[5,12]. As a result, landslides alone are not enough to explain the increased prevalence of DA among affected populations. Thus, while environmental factors play an important role, there needs to be a more comprehensive approach to understanding other factors that affect skin condition in post-disaster situations[11,13].

The authors all agree that landslide disasters are some of the culprits that have led to the increase in cases of atopic dermatitis, especially resulting from exposure to mud that is allergenic. The mud resulting from the landslide contains dust, mold, and microorganisms as well as chemicals that are probably going to create skin irritation, especially among the atopic predisposed. In addition, disaster conditions with limited access to sanitation facilities and potable water aggravate the condition even more by making the skin susceptible to inflammation and infection. Unhygienic and humid conditions also aggravate skin disease like atopic dermatitis. Therefore, disaster mitigation initiatives must include aspects of skin health and environmental sanitation as a priority item of urgent need to reduce survivors' health burden.

Conclusion

Landslides can trigger an increase in cases of atopic dermatitis (AD) through a variety of mechanisms, including increased exposure to allergens such as dust, mold, and pollen, as well as sanitary limitations that make the skin more susceptible to irritation and infection. In addition, post-disaster psychological impacts such as stress and anxiety can also worsen skin inflammation, which contributes to the incidence of AD. Environmental changes due to landslides, such as air pollution, water and soil contamination, and skin microbiota disturbances, further worsen AD conditions in individuals with allergic predispositions. Other

external factors, such as climate change and industrial pollution, also play a role in the increase in the prevalence of AD globally.

While there is strong evidence linking landslides to increased AD, these impacts can be minimized through effective disaster mitigation, such as improved sanitation, access to clean water, and proper skin care. Several studies have shown that with a quick response and good mitigation measures, a surge in AD cases can be prevented. Therefore, a holistic approach in disaster mitigation must include aspects of skin health and environmental sanitation to reduce the health burden for survivors.

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