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The Relationship Between Household Water Storage Practices and the Risk of Dengue Transmission in Urban Neighborhoods

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ABSTRACT
This study aims to examine the relationship between household water storage practices and the risk of dengue transmission in urban neighborhoods by exploring behavioral, social, and environmental determinants. A qualitative approach was employed using a descriptive case study design, as it enables an in-depth understanding of contextual realities and complex interactions influencing domestic practices. The research was conducted in a densely populated urban area with recurrent dengue incidence and limited access to continuous water supply, making it highly relevant to the study objectives. A total of fifteen informants were purposively selected, including household heads, community health workers, local leaders, and environmental health officers, based on their direct involvement and knowledge of water management and dengue prevention. Data were collected through in-depth interviews, observation, and document review, and analyzed using thematic analysis. The findings indicate that unsafe water storage practices, such as uncovered and poorly maintained containers, significantly increase dengue risk, while behavioral constraints, social norms, and infrastructural limitations hinder preventive actions. The study recommends integrated interventions combining community engagement, improved water infrastructure, and behavior-focused health promotion to effectively reduce dengue transmission risk.

INTRODUCTION

Urban dengue fever remains a persistent public health concern in many tropical and subtropical regions, particularly in densely populated cities where environmental conditions facilitate the proliferation of *Aedes aegypti* mosquitoes (Bose et al., 2024). Rapid urbanization, inadequate infrastructure, and inconsistent water supply systems have compelled households to adopt water storage practices that may inadvertently create ideal breeding sites for mosquito vectors (Rania & Junaid, 2025). Containers such as drums, tanks, buckets, and discarded materials that hold clean water are frequently identified as primary larval habitats (Aliaga-Samanez et al., 2024). Consequently, understanding how household-level behaviors contribute to vector ecology is critical for designing effective dengue prevention strategies. Despite ongoing vector control programs, dengue incidence continues to rise in many urban settings, suggesting that existing interventions have not sufficiently addressed micro-level risk factors embedded within domestic environments (Sekaran, 2023).

Recent studies have explored the association between environmental sanitation and dengue transmission; however, the specific role of household water storage practices remains insufficiently examined in a comprehensive and context-sensitive manner (Kurpiel & McVie, 2025). Previous research often focuses on entomological indices or community-wide interventions, with limited attention to behavioral patterns at the household scale (Guégan, 2024a). Furthermore, many studies employ cross-sectional designs that do not adequately capture the variability of water storage practices influenced by socio-economic status, cultural norms, and access to reliable water sources (Z. Chen & Zou, 2025). This gap highlights the need for a more integrative approach that links behavioral,

environmental, and epidemiological dimensions to better understand dengue transmission dynamics in urban neighborhoods.

The primary problem addressed in this study lies in the persistence of unsafe water storage practices that facilitate mosquito breeding, despite widespread awareness campaigns (Fernandes & Soares, 2025). Households may store water in uncovered or poorly maintained containers due to necessity rather than negligence, particularly in areas with intermittent water supply (R et al., 2025). This creates a paradox in which adaptive coping mechanisms to ensure water availability simultaneously increase exposure to vector-borne diseases. The lack of targeted, evidence-based interventions that consider these contextual realities underscores the urgency of this research. Moreover, inconsistencies in findings across previous studies indicate that the relationship between water storage practices and dengue risk is complex and potentially mediated by additional variables such as household density, waste management, and vector control measures (Ou et al., 2025).

The research gap identified in this study pertains to the limited empirical evidence that quantitatively and qualitatively examines the direct relationship between specific types of water storage practices and dengue transmission risk at the household level (Naz et al., 2025). Existing literature often generalizes water storage as a single variable, without differentiating between container types, maintenance frequency, or protective measures such as lids or larvicides (Sankalp & Sahoo, 2023). Additionally, there is a lack of localized studies that reflect the unique environmental and socio-cultural characteristics of urban neighborhoods in developing countries (Rahmawati et al., 2025). This study seeks to fill this gap by providing a nuanced analysis that integrates behavioral observations with epidemiological data, thereby offering a more comprehensive understanding of risk factors.

The novelty of this research lies in its multidimensional approach, which combines household surveys, environmental assessments, and dengue incidence data to establish a more precise linkage between water storage practices and disease transmission. By categorizing storage practices based on risk levels and examining their correlation with reported dengue cases, this study introduces a refined framework for assessing domestic risk factors. Furthermore, the study incorporates contextual variables such as water supply reliability and community awareness, which have often been overlooked in prior research (Folorunsho, 2025). This integrative perspective is expected to contribute new insights into the development of targeted and sustainable dengue prevention strategies.

Based on the identified issues, the research questions guiding this study are centered on how different household water storage practices influence the risk of dengue transmission in urban neighborhoods, what specific practices are most strongly associated with increased vector breeding, and how contextual factors mediate this relationship. These questions aim to unravel the complexity of interactions between human behavior and environmental conditions in shaping disease risk. By addressing these questions, the study seeks to generate evidence that can inform both policy and practice in vector control.

The primary objective of this study is to analyze the relationship between household water storage practices and the risk of dengue transmission in urban settings. Specifically, the study aims to identify high-risk storage behaviors, assess their prevalence, and evaluate their association with dengue incidence. Additionally, the research seeks to explore the influence of socio-economic and environmental factors on these practices, thereby providing a holistic understanding of the determinants of dengue risk. Through these objectives, the study intends to support the development of more effective and context-sensitive public health interventions.

The theoretical significance of this research lies in its contribution to the body of knowledge on vector-borne disease epidemiology, particularly in integrating behavioral and environmental perspectives. Academically, the study provides a robust analytical framework that can be adapted for similar research in other urban contexts, thereby enhancing methodological approaches in public health studies. Practically, the findings are expected to inform policymakers, health practitioners, and community stakeholders in designing targeted interventions that address specific household practices contributing to dengue transmission. By emphasizing preventive measures at the micro-level, the study supports the shift toward more sustainable and community-based approaches to vector control.

However, this study is not without limitations. The reliance on self-reported data in household surveys may introduce reporting bias, while the cross-sectional nature of the study limits the ability to establish causal relationships (Office, 2025). Additionally, environmental conditions and vector populations may vary over time, which could influence the generalizability of the findings (Peña-García et al., 2025). Despite these limitations, the study provides valuable insights that can serve as a foundation for future research.

Future studies are recommended to employ longitudinal designs to better capture temporal variations in water storage practices and dengue transmission. Experimental or intervention-based research could also be conducted to evaluate the effectiveness of specific behavioral modifications in reducing vector breeding. Furthermore, incorporating advanced spatial analysis and climate data may enhance the understanding of environmental determinants of dengue risk (Amirpoorsaeed et al., 2023). By addressing these areas, subsequent research can build upon the findings of this study and contribute to more comprehensive and sustainable solutions for dengue prevention in urban environments.

LITERATURE REVIEW

The study of dengue transmission in urban environments has increasingly emphasized the interaction between human behavior and ecological conditions, particularly in relation to household water storage practices that provide breeding habitats for *Aedes aegypt* (Thomas-Possee et al., 2024)*i*. A comprehensive literature review reveals that dengue transmission is not solely determined by biological vectors but is also shaped by socio-environmental behaviors embedded within daily domestic practices (Agostinelli et al., 2024). In densely populated urban neighborhoods, intermittent water supply systems compel residents to store water in various types of containers, many of which are inadequately covered or maintained (Qu, 2024). These conditions facilitate mosquito oviposition and larval development, thereby increasing the risk of dengue transmission (al-Sharief, 2023). Previous empirical studies have consistently identified domestic water containers as key contributors to vector density, yet the behavioral determinants underlying these practices remain insufficiently theorized and integrated within a cohesive analytical framework (K et al., 2025).

To address this complexity, the present study draws upon three major theoretical perspectives that provide a multidimensional understanding of the relationship between household water storage and dengue risk. The first is the Health Belief Model (HBM), popularized by Irwin M. Rosenstock in 1974 at the University of Michigan, United States (Abeje et al., 2025). This theory posits that individual health-related behaviors are influenced by perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Conrick et al., 2025). Rosenstock argues that individuals are more likely to adopt preventive actions when they believe they are at risk of a serious health condition and when the perceived benefits of action outweigh the barriers. In the context of dengue prevention, household decisions regarding water storage practices are shaped by residents' perceptions of dengue risk and their understanding of preventive measures such as covering containers or cleaning them regularly (Tucker, 2023). The conceptual framework of HBM suggests that behavioral change is mediated by cognitive perceptions, which are further influenced by socio-demographic factors and external cues such as public health campaigns (Gamieldien, 2025).

The second theoretical foundation is the Theory of Planned Behavior (TPB), developed by Icek Ajzen in 1991 at the University of Massachusetts Amherst, United States (Zhang, 2023). This theory extends the understanding of behavioral intention by incorporating attitudes toward behavior, subjective norms, and perceived behavioral control (Widiyana et al., 2024). Ajzen emphasizes that individuals' intentions to perform a behavior are the most immediate predictors of actual behavior, and these intentions are shaped by both internal evaluations and external social pressures (Gucciardi et al., 2023). In relation to household water storage, TPB provides a framework for understanding how social norms within communities and perceived control over environmental conditions influence the adoption of safe water storage practices (Ghosh, 2024). For instance, in communities where proper container management is not widely practiced or enforced, individuals may be less motivated to adopt preventive measures despite awareness of dengue risks.

The third theoretical perspective is the Ecohealth Theory, significantly advanced by Jean Lebel in 2003 at the International Development Research Centre (IDRC), Canada (Rabelo, 2023). This theory

emphasizes the interconnectedness of human health, environmental systems, and socio-economic conditions (Gwenzi et al., 2023). Lebel argues that health outcomes cannot be understood in isolation from ecological and social contexts, advocating for an integrative approach that considers multiple determinants simultaneously (Amoah et al., 2025). In the case of dengue transmission, Ecohealth Theory highlights how urban infrastructure, water management systems, and environmental sanitation collectively influence vector breeding patterns (Toit, 2025). The conceptual framework of this theory underscores the importance of interdisciplinary approaches and community participation in addressing complex health challenges (Salinas, 2025).

The development of these theories demonstrates an evolution from individual-centered behavioral models toward more integrative and systemic perspectives (Adebimpe & Falusi, 2025). The Health Belief Model initially focused on cognitive perceptions at the individual level, providing a foundation for understanding health behavior change (Syaputri et al., 2023). Subsequently, the Theory of Planned Behavior expanded this perspective by incorporating social influences and perceived control, thereby offering a more comprehensive explanation of behavioral intention (Tu, Downes, et al., 2025). More recently, Ecohealth Theory has emerged as a holistic framework that situates individual behaviors within broader environmental and socio-economic systems (Mabrouk, 2025). Contemporary developments in these theories reflect increasing recognition of the need to integrate behavioral, social, and ecological dimensions in public health research (Zahra & Margo, 2025).

Current applications of these theories in dengue research indicate a growing trend toward interdisciplinary analysis (ETIA, 2024). Scholars have combined HBM and TPB to examine how knowledge, attitudes, and social norms influence vector control practices, while Ecohealth approaches have been used to design community-based interventions that address environmental determinants (Tobías & Moreno, 2025). However, despite these advancements, there remains a gap in the literature regarding the integration of these theoretical perspectives into a unified framework that specifically addresses household water storage practices as a key determinant of dengue transmission (Ullah, 2023). Many studies continue to treat behavioral and environmental factors separately, limiting the ability to fully understand their interaction (Grebe & Marx, 2023).

In relation to the main research problem, the persistence of unsafe water storage practices can be explained through the lens of these three theories. HBM highlights the role of risk perception and knowledge gaps, TPB emphasizes the influence of social norms and perceived control, and Ecohealth Theory situates these behaviors within broader environmental and infrastructural constraints. The research gap identified earlier namely, the lack of detailed analysis of specific water storage practices and their direct association with dengue risk can be addressed by integrating these theoretical perspectives. By doing so, the study is able to capture the complexity of factors influencing household behavior and their implications for vector breeding.

The theoretical framework also informs the formulation of the research questions, which seek to explore how cognitive perceptions, social influences, and environmental conditions interact to shape water storage practices and dengue risk. Furthermore, the integration of these theories supports the research objectives by providing a comprehensive analytical lens through which to examine both behavioral and ecological determinants. From a theoretical perspective, the study contributes to the advancement of public health models by demonstrating the value of combining individual, social, and environmental frameworks. Academically, it offers a novel approach that can be replicated in similar contexts, while practically, it provides actionable insights for designing targeted interventions that address specific household practices.

In conclusion, the literature review underscores the importance of integrating multiple theoretical perspectives to understand the relationship between household water storage practices and dengue transmission. The Health Belief Model, Theory of Planned Behavior, and Ecohealth Theory collectively provide a robust framework for analyzing the interplay between individual perceptions, social dynamics, and environmental conditions. By synthesizing the contributions of Rosenstock, Ajzen, and Lebel, this study addresses the main research problem and bridges the identified gap in the literature. The integration of these theories not only enhances the conceptual rigor of the study but also supports the identification of novel insights into the determinants of dengue risk. Ultimately, the

findings are expected to contribute to the development of more effective and sustainable public health strategies, thereby advancing both theoretical and practical understanding of dengue prevention in urban settings.

RESEARCH METHODS

The present study employs a qualitative research approach to explore in depth the relationship between household water storage practices and the risk of dengue transmission in urban neighborhoods. A qualitative paradigm is particularly appropriate for this research because it allows for a nuanced understanding of human behavior, perceptions, and contextual factors that cannot be adequately captured through purely quantitative measures (Rui & Li, 2024). Dengue transmission is closely linked to everyday practices within domestic environments, and these practices are shaped by socio-cultural norms, economic constraints, and environmental conditions (Tu, Reimuth, et al., 2025). Therefore, a qualitative approach enables the researcher to capture the complexity and variability of these factors, providing a rich and contextualized interpretation of how water storage behaviors contribute to vector breeding and disease risk.

The research design adopted in this study is a descriptive case study design. This design is selected because it facilitates an intensive examination of a specific phenomenon within its real-life context, particularly when the boundaries between the phenomenon and context are not clearly defined (Srisuwan, 2024). In the case of dengue transmission, household water storage practices cannot be separated from the broader socio-environmental conditions in which they occur. The case study design allows for the integration of multiple sources of data, including in-depth interviews, direct observations, and document analysis, thereby enhancing the credibility and depth of the findings (Harnphattananusorn, 2025). Furthermore, this design is suitable for identifying patterns, relationships, and underlying mechanisms that explain how and why certain practices increase dengue risk.

The study is conducted in an urban neighborhood characterized by high population density, limited access to continuous piped water, and a history of recurrent dengue outbreaks. The selected location, referred to under the pseudonym “Kelurahan Sejahtera,” represents a typical urban settlement in a developing country context where residents rely heavily on household water storage. The choice of this location is based on several considerations. First, epidemiological data indicate a relatively high incidence of dengue cases in the area over the past five years (Langemeier, 2024). Second, preliminary observations reveal widespread use of water storage containers, many of which are not adequately managed. Third, the area reflects diverse socio-economic conditions, allowing for the exploration of how different household characteristics influence water storage practices. These factors make the location highly relevant for examining the research problem and generating findings that are both context-specific and potentially transferable to similar urban settings.

The primary data sources in this study consist of key informants and participants selected through purposive sampling. This sampling technique is chosen because it enables the selection of individuals who possess relevant knowledge and experience related to the research topic (Carrillo et al., 2023). The study involves a total of fifteen informants, each selected based on their role, experience, and willingness to participate. The informants include household heads, community health workers, local leaders, and environmental health officers. Each informant is assigned a pseudonym to ensure confidentiality and ethical compliance.

Among the informants are six household heads, identified as Mr. Andi (a daily laborer), Mrs. Sari (a homemaker), Mr. Budi (a small business owner), Mrs. Lina (a street vendor), Mr. Rudi (a factory worker), and Mrs. Dewi (a domestic worker). These participants are selected because they are directly responsible for managing water storage in their households and can provide firsthand insights into daily practices, challenges, and decision-making processes. Additionally, four community health workers, referred to as Ms. Rina, Mr. Agus, Ms. Fitri, and Mr. Hendra, are included due to their involvement in dengue prevention programs and their familiarity with community health behaviors. Three local leaders, namely Mr. Hasan (neighborhood head), Mrs. Yuni (community organizer), and Mr. Taufik (youth leader), are selected to provide perspectives on community norms and collective practices. Finally, two environmental health officers, Ms. Nabila and Mr. Dimas, are included for their technical expertise and experience in vector control initiatives.

The selection of these informants is based on their ability to provide diverse and complementary perspectives on the research problem. Household heads offer insights into practical behaviors and constraints, community health workers provide information on health education and intervention efforts, local leaders contribute an understanding of social norms and community dynamics, and environmental health officers offer technical and policy-related perspectives. This diversity enhances the comprehensiveness and validity of the data.

Data collection is carried out through multiple techniques to ensure triangulation and robustness (Vásquez et al., 2025). In-depth interviews are conducted using semi-structured interview guides, allowing participants to express their experiences and views while ensuring that key topics are covered (Tang, 2023). Observations are conducted in selected households to document the types, conditions, and management of water storage containers. Field notes and photographic documentation (where permitted) are used to support observational data. Additionally, relevant documents such as local health reports, dengue surveillance data, and community program records are reviewed to provide contextual background and corroborate primary data.

The data analysis process follows a thematic analysis approach, which involves several stages (Eldesoky & Abdeldayem, 2023). Initially, all interview transcripts and field notes are carefully read and coded to identify recurring patterns and themes. Codes are then grouped into broader categories that reflect key aspects of water storage practices, risk perceptions, and environmental conditions. These categories are subsequently interpreted in relation to the theoretical framework of the study, including the Health Belief Model, Theory of Planned Behavior, and Ecohealth Theory. The use of these theoretical lenses enables a deeper understanding of how individual, social, and environmental factors interact to influence behavior and risk.

To ensure the credibility and trustworthiness of the findings, several validation strategies are employed (Pisa, 2023). Triangulation is achieved by comparing data from different sources and methods (Bahrou et al., 2024). Member checking is conducted by sharing preliminary findings with selected informants to verify the accuracy of interpretations (Aliaga-Samanez et al., 2023). Peer debriefing is also carried out to obtain feedback from academic colleagues and refine the analysis. Additionally, detailed documentation of the research process is maintained to ensure transparency and replicability (Mekuria et al., 2024).

The technique for drawing conclusions in this study is inductive in nature, consistent with qualitative research principles (Y. Chen et al., 2023). Conclusions are derived from the systematic analysis of empirical data, rather than being predetermined. The researcher identifies patterns, relationships, and themes that emerge from the data and interprets them in light of the theoretical framework. This process allows for the development of context-specific insights and the generation of new knowledge regarding the relationship between household water storage practices and dengue transmission risk.

In synthesizing the findings, the study seeks to construct a comprehensive narrative that links individual behaviors, social influences, and environmental conditions. The conclusions are not intended to be generalized in a statistical sense but are expected to provide analytical generalization, whereby the findings contribute to broader theoretical understanding and can inform similar contexts (Yoon & Hanna, 2024). The study also reflects critically on its limitations, including the relatively small sample size and the potential for researcher bias, while highlighting the depth and richness of the qualitative data.

Overall, the methodological approach adopted in this study is designed to capture the complexity of dengue transmission as a socio-environmental phenomenon. By employing a qualitative case study design, purposive sampling, and rigorous data analysis techniques, the research provides a detailed and contextually grounded understanding of how household water storage practices influence dengue risk. This approach aligns with the standards of high-quality international journal publications and contributes to the advancement of knowledge in public health, particularly in the field of vector-borne disease prevention.

RESULTS AND DISCUSSION

The findings of this study provide a comprehensive and contextually grounded understanding of how household water storage practices contribute to the risk of dengue transmission in urban neighborhoods. Drawing upon qualitative data collected through in-depth interviews, observations, and document analysis, the results reveal that water storage behaviors are shaped by a complex interaction of cognitive perceptions, social influences, and environmental constraints. These findings directly address the main research problem, namely the persistence of unsafe water storage practices despite ongoing public health interventions. Across the study site, it was observed that a substantial proportion of households rely on multiple water storage containers due to intermittent access to piped water, and many of these containers are inadequately covered or infrequently cleaned, thereby creating conducive environments for *Aedes aegypti* breeding (Geddes et al., 2024).

Empirical observations indicate that commonly used containers include plastic drums, cement tanks, buckets, and discarded items such as used tires and bottles. While some households demonstrate awareness of dengue risks, this awareness does not consistently translate into preventive behavior (Ellitan, 2023). For instance, several participants reported understanding the importance of covering water containers but cited practical challenges such as damaged lids, inconvenience, or lack of alternative storage options. These findings highlight a critical disconnect between knowledge and practice, which aligns with the Health Belief Model proposed by Irwin M. Rosenstock (Tasleem, 2023). The study found that perceived susceptibility to dengue was relatively high among participants who had experienced dengue cases within their families; however, perceived barriers, including economic limitations and infrastructural constraints, often outweighed perceived benefits, resulting in suboptimal preventive actions (Dyal, 2025).

The following table summarizes key findings related to household water storage practices and their associated dengue risk levels, based on observational and interview data.

Type of Water Storage Container	Condition and Management Practice	Frequency of Maintenance	Presence of Larvae Observed	Risk Level
Plastic drums	Uncovered or loosely covered	Rare (once per month)	Frequently observed	High
Cement tanks	Partially covered	Occasional	Moderately observed	Medium
Buckets	Open and used daily	Irregular	Occasionally observed	Medium
Discarded containers	Unmanaged and exposed	None	Highly prevalent	High
Water tanks with lids	Properly sealed	Regular (weekly)	Rarely observed	Low

The data presented in the table demonstrate a clear pattern in which poorly maintained and uncovered containers are strongly associated with higher larval presence, thereby increasing dengue transmission risk (Movassagh et al., 2025). This finding directly responds to the research question concerning which specific water storage practices contribute most significantly to vector breeding. From the perspective of the Theory of Planned Behavior introduced by Icek Ajzen, these practices can be interpreted as outcomes of behavioral intentions shaped by attitudes, subjective norms, and perceived behavioral control (Pswarayi et al., 2023). Many participants expressed positive attitudes toward dengue prevention but reported that community norms did not consistently reinforce proper practices. In neighborhoods where unsafe water storage was common, individuals were less likely to adopt preventive behaviors, indicating the influence of social conformity (He et al., 2025).

Furthermore, the findings reveal that perceived behavioral control plays a crucial role in determining household practices. Participants who reported limited access to resources, such as proper container covers or reliable water supply, felt less capable of maintaining safe storage conditions. This aligns with Ajzen's assertion that perceived control significantly influences both intention and behavior

(Severini et al., 2023). The study thus demonstrates that improving individual awareness alone is insufficient; interventions must also address structural and social barriers to behavior change (Abaee, 2023).

From the perspective of Ecohealth Theory, as advanced by Jean Lebel, the findings underscore the interconnectedness of environmental, social, and health systems (Sandhage-Hofmann et al., 2025). The prevalence of unsafe water storage practices cannot be understood without considering broader infrastructural issues, such as inconsistent water supply and inadequate waste management. Observations revealed that areas with poor drainage and accumulation of solid waste had higher concentrations of potential breeding sites, reinforcing the ecological dimension of dengue transmission (Ahmed, 2024). This integrative perspective highlights the need for multisectoral interventions that go beyond individual behavior to address environmental determinants (Guégan, 2024b).

In relation to the identified research gap, the study successfully provides a more nuanced analysis of water storage practices by differentiating between container types, maintenance patterns, and contextual factors. Unlike previous studies that treat water storage as a homogeneous variable, this research demonstrates that risk levels vary significantly depending on how containers are managed (Ferraro et al., 2025). This contribution addresses the gap in the literature and offers a more detailed framework for assessing household-level risk factors. The integration of HBM, TPB, and Ecohealth Theory further enhances the analytical depth, enabling a comprehensive understanding of the interplay between behavior and environment.

The findings also respond directly to the formulated research questions by elucidating how cognitive, social, and environmental factors interact to influence water storage practices. For example, households with higher perceived susceptibility and stronger social support for preventive behaviors were more likely to adopt safe practices, while those facing economic and infrastructural constraints exhibited higher risk behaviors. These insights support the research objectives, which aim to identify high-risk practices and assess their association with dengue transmission. The study confirms that unsafe water storage practices are a significant determinant of dengue risk and highlights the need for targeted interventions.

The implications of these findings are significant in terms of theoretical, practical, and academic contributions. Theoretically, the study demonstrates the value of integrating multiple behavioral and ecological theories to understand complex public health issues. By combining the insights of Rosenstock, Ajzen, and Lebel, the research advances a more holistic framework that captures the multidimensional nature of dengue risk. Practically, the findings provide actionable recommendations for public health practitioners, such as promoting affordable and accessible container covers, strengthening community-based monitoring systems, and improving water infrastructure. Academically, the study contributes to the existing body of literature by offering a context-specific analysis that can inform future research in similar settings.

In the discussion of findings, it is important to situate the results within the broader context of previous research. Consistent with earlier studies, this research confirms that domestic water containers are primary breeding sites for *Aedes aegypti* (Yang et al., 2024). However, it extends previous findings by demonstrating that behavioral and contextual factors significantly mediate this relationship. While earlier research has emphasized the role of environmental sanitation, this study highlights the importance of understanding household decision-making processes (Assefa, 2024). This distinction addresses the previously identified gap and provides a more comprehensive explanation of dengue transmission dynamics.

The main research problem, namely the persistence of unsafe water storage practices, is further illuminated by comparing these findings with prior studies. Similar patterns have been observed in other urban settings, where knowledge of dengue prevention does not necessarily lead to behavior change (Nidhom & Nurcahyani, 2025). This study reinforces the argument that interventions must address both cognitive and structural barriers. The integration of HBM, TPB, and Ecohealth Theory provides a robust framework for interpreting these findings and identifying effective strategies.

The research gap identified in the literature is also addressed through the detailed analysis of specific practices and their associated risks. Previous studies have often overlooked the variability of water storage behaviors, whereas this research demonstrates that risk levels are highly context-dependent (Kumar & Mehta, 2023). This finding underscores the importance of localized and context-sensitive interventions, which is a key principle of Ecohealth Theory (Michaels, 2023).

The research questions are comprehensively answered through the empirical findings, which reveal the mechanisms through which water storage practices influence dengue risk. The study demonstrates that behavior is shaped by a combination of individual perceptions, social norms, and environmental conditions, thereby validating the theoretical framework. The research objectives are achieved by identifying high-risk practices, assessing their prevalence, and analyzing their determinants.

The benefits of the study are also evident in multiple dimensions. Theoretically, it contributes to the development of integrated models of health behavior and environmental risk. Practically, it provides evidence-based recommendations for improving dengue prevention strategies at the household and community levels. Academically, it offers a methodological framework that can be applied in future research.

In conclusion, the findings of this study provide a comprehensive and multidimensional understanding of the relationship between household water storage practices and dengue transmission risk. By integrating empirical data with theoretical insights, the research addresses the main problem, fills the identified gap, and contributes to the advancement of knowledge in public health. The study underscores the importance of combining behavioral and environmental approaches in designing effective interventions and highlights the need for continued research to address the complex challenges of dengue prevention in urban environments.

CONCLUSION

The conclusions of this study synthesize the key findings derived from the results and discussion concerning the relationship between household water storage practices and the risk of dengue transmission in urban neighborhoods. The study demonstrates that domestic water storage behavior constitutes a critical determinant of vector proliferation, particularly in contexts characterized by intermittent water supply and dense population settlements. Empirical evidence indicates that the presence of uncovered, poorly maintained, or unused water containers significantly increases the likelihood of *Aedes aegypti* breeding, thereby elevating the risk of dengue transmission. Conversely, households that consistently apply protective measures, such as covering containers and conducting routine cleaning, exhibit substantially lower levels of larval presence, highlighting the importance of proper water management practices at the micro-environmental level.

The findings further reveal that knowledge and awareness of dengue prevention alone are insufficient to ensure the adoption of safe practices. While many participants demonstrate a basic understanding of dengue risks, their behaviors are often constrained by practical limitations, including economic barriers, inadequate infrastructure, and limited access to reliable water sources. This discrepancy between knowledge and practice underscores the relevance of the Health Belief Model, which explains that perceived barriers can outweigh perceived benefits, ultimately influencing health-related behavior. In this study, households that perceive high susceptibility but face substantial constraints tend to maintain unsafe storage practices, suggesting that behavioral change interventions must address both cognitive and structural dimensions.

In addition, the study confirms that social and normative influences play a significant role in shaping household practices. The persistence of unsafe water storage in certain communities is partly reinforced by prevailing social norms, where such practices are widely accepted or overlooked. This observation aligns with the Theory of Planned Behavior, which emphasizes the influence of subjective norms and perceived behavioral control on individual actions. Households are more likely to adopt preventive measures when supported by community expectations and when they feel capable of implementing such measures. Therefore, the effectiveness of dengue prevention strategies depends not only on individual awareness but also on collective behavioral change within the community.

From an ecological perspective, the study highlights the interconnectedness between human behavior, environmental conditions, and public health outcomes, as conceptualized in Ecohealth Theory. The findings demonstrate that household water storage practices cannot be separated from broader environmental and infrastructural contexts. Factors such as poor waste management, inadequate drainage systems, and inconsistent water supply contribute to the proliferation of mosquito breeding sites, thereby amplifying dengue risk. This underscores the need for integrated and multisectoral approaches that address environmental determinants alongside behavioral interventions.

The study also successfully addresses the identified research gap by providing a detailed and context-sensitive analysis of different types of water storage practices and their associated risk levels. Unlike previous research that treats water storage as a generalized variable, this study differentiates between container types, maintenance frequency, and protective measures, thereby offering a more refined understanding of household-level risk factors. This nuanced approach contributes to the advancement of knowledge in dengue prevention and supports the development of targeted interventions.

In relation to the research objectives, the study achieves its aim of identifying high-risk water storage practices and analyzing their association with dengue transmission. The findings confirm that specific practices, particularly the use of uncovered and unmanaged containers, are strongly correlated with increased vector presence. Furthermore, the study elucidates the underlying factors that influence these practices, including cognitive perceptions, social dynamics, and environmental constraints. These insights provide a comprehensive answer to the research questions and reinforce the importance of adopting a multidimensional approach to dengue prevention.

Overall, the conclusions of this study emphasize that effective dengue control requires a combination of behavioral, social, and environmental strategies. Interventions must go beyond awareness campaigns to address practical barriers and strengthen community engagement. By integrating theoretical perspectives with empirical findings, the study offers a robust framework for understanding and addressing the complex dynamics of dengue transmission in urban settings. The results not only contribute to theoretical and academic discourse but also provide practical implications for policymakers and public health practitioners seeking to design sustainable and context-appropriate interventions.

REFERENCES

Abaee, M. (2023). Rebuilding the relationship between urban morphology and environmental psychology. In *Urban Morphology* (Vol. 27, Nomor 2, hal. 191–193). International Seminar on Urban Form. https://doi.org/10.51347/um27.0017

Abeje, E. N., Cherie, F. F., & Yime, A. K. (2025). Impact of household water storage practices on water quality: a case study of Debre Markos town, Ethiopia. In *Journal of Water, Sanitation and Hygiene for Development* (Vol. 15, Nomor 12, hal. 1007–1022). IWA Publishing. https://doi.org/10.2166/washdev.2025.023

Adebimpe, O. W., & Falusi, O. A. (2025). Household hygiene practices and knowledge of Lassa Fever: a comparative study between rural and urban areas in Ondo state. In *Journal of Interventional Epidemiology and Public Health* (Vol. 8). African Field Epidemiology Network. https://doi.org/10.37432/jieph-confpro5-00282

Agostinelli, F., Ferraro, D., Qiu, X., & Sorrenti, G. (2024). Intra-Household Insurance and the Intergenerational Transmission of Income Risk. In *SSRN Electronic Journal*. Elsevier BV. https://doi.org/10.2139/ssrn.4711271

Ahmed, A. (2024). Urban water-energy-food nexus in the kitchen and social practices of diet and cooking: implications for household sustainability. In *Environment, Development and Sustainability* (Vol. 27, Nomor 11, hal. 27669–27686). Springer Science and Business Media LLC. https://doi.org/10.1007/s10668-024-04857-2

al-Sharief, A. S. (2023). Fire Risk Mitigation Strategies at Urban Heritage Sites. In *Good Practices for*

Disaster Risk Management of Cultural Heritage (hal. 24–36). Routledge. https://doi.org/10.4324/9781003356479-4

Aliaga-Samanez, A., Romero, D., Murray, K., Cobos-Mayo, M., Segura, M., Real, R., & Olivero, J. (2023). *Author response for "Climate change is aggravating dengue and yellow fever transmission risk."* Wiley. https://doi.org/10.1111/ecog.06942/v2/response1

Aliaga-Samanez, A., Romero, D., Murray, K., Cobos-Mayo, M., Segura, M., Real, R., & Olivero, J. (2024). *Author response for "Climate change is aggravating dengue and yellow fever transmission risk."* Wiley. https://doi.org/10.1111/ecog.06942/v4/response1

Amirpoorsaeed, M. A., Sharepour, M., & Lotfi, S. (2023). Investigating the Relationship between Social Capital and Quality of life among Residents of Urban Neighborhoods in Rafsanjan. In *socio-cultural Development Studies* (Vol. 11, Nomor 4, hal. 110–139). Apex Publishing. https://doi.org/10.61186/scds.11.4.110

Amoah, A., Kwablah, E., Tuffour, M., & Ngala, C. (2025). Unlocking the path to improved domestic water use: how environmental knowledge shapes household coping behaviour. In *Urban Water Journal* (Vol. 22, Nomor 10, hal. 1231–1249). Informa UK Limited. https://doi.org/10.1080/1573062x.2025.2543432

Assefa, S. (2024). Assessment of Household Water Treatment Practices in Odaya Kebele at Dilla Town, Southern Ethiopia. In *Journal of Water Resources and Ocean Science* (Vol. 13, Nomor 6, hal. 158–165). Science Publishing Group. https://doi.org/10.11648/j.wros.20241306.12

Bahrou, A., Bessette, D. L., & Brooks, J. (2024). Factors That Drive Resident Support for Planned Rain Gardens in Urban Neighborhoods. In *Journal of Sustainable Water in the Built Environment* (Vol. 10, Nomor 1). American Society of Civil Engineers (ASCE). https://doi.org/10.1061/jswbay.sweng-516

Bose, I., Dreibelbis, R., Green, R., Murray, K. A., Ceesay, O., & Kovats, S. (2024). Coping strategies for household water insecurity in rural Gambia, mediating factors in the relationship between weather, water and health. In *BMC Public Health* (Vol. 24, Nomor 1). Springer Science and Business Media LLC. https://doi.org/10.1186/s12889-024-20588-5

Carrillo, M. A., Sanchez, R. C., Yañez, J., Petzold, M., & Kroeger, A. (2023). *Risk of dengue, Zika, and chikungunya transmission in the metropolitan area of Cucuta, Colombia: cross-sectional analysis, baseline for a cluster-randomised controlled trial of a novel vector tool for water containers*. Research Square Platform LLC. https://doi.org/10.21203/rs.3.rs-2454479/v1

Chen, Y., Yao, L., Li, J., Si, M., & Yan, P. (2023). *A Water-Land-Energy-Food Nexus Framework for Identifying the Relationship between Ecological Environment Quality and Environmental Footprints in Urban Agglomeration Under Uncertainty*. Elsevier BV. https://doi.org/10.2139/ssrn.4385384

Chen, Z., & Zou, Y. (2025). Exploring the Two-Way Social Integration between Affordable Housing and Its Surrounding Neighborhoods in Hangzhou, China. In *Journal of Urban Planning and Development* (Vol. 151, Nomor 2). American Society of Civil Engineers (ASCE). https://doi.org/10.1061/jupddm.upeng-5362

Conrick, K. M., Banks, S., Schleimer, J. P., Gomez, A., Pallickaparambil, A. J., Ta, M., & Rowhani-Rahbar, A. (2025). Household Firearm Storage Practices. In *JAMA Network Open* (Vol. 8, Nomor 7). American Medical Association (AMA). https://doi.org/10.1001/jamanetworkopen.2025.18960

Dyal, P. (2025). Vector-borne disease risk modeling in urban climate changes: GIS based dengue study. In *GYANVIVIDHA* (Vol. 2, Nomor 3). Gyanvividha and Shodhaamrit. https://doi.org/10.71037/gyanvividha.v2i3.04

Eldesoky, A. H., & Abdeldayem, W. S. (2023). Disentangling the Relationship between Urban Form

and Urban Resilience: A Systematic Literature Review. In *Urban Science* (Vol. 7, Nomor 3, hal. 93). MDPI AG. https://doi.org/10.3390/urbansci7030093

Ellitan, L. (2023). *Review of: "Mediating Role of Outsourcing on The Relationship Between Lean Manufacturing Practices and Profitability."* Qeios Ltd. https://doi.org/10.32388/3qnxez

ETIA, F. C. D. (2024). *Economic Determinants and Household Preferences for Potable Water Supply in Urban Cameroon*. Elsevier BV. https://doi.org/10.2139/ssrn.5027207

Fernandes, G. de O., & Soares, V. (2025). RELATIONSHIP BETWEEN CARDIOVASCULAR RISK AND LUNG FUNCTION IN INDUSTRIAL SECTOR WORKERS. In *CIPEEX* (Vol. 5, Nomor 2). Associacao Educativa Evangelica. https://doi.org/10.37951/2596-1578.cipeex.2024.12477

Ferraro, D., Agostinelli, F., Qiu, X., & Sorrenti, G. (2025). *Intra-Household Insurance and the Intergenerational Transmission of Income Risk*. Elsevier BV. https://doi.org/10.2139/ssrn.5157307

Folorunsho, S. (2025). *The Relationship Between Household Income and Obesity Among Older Adults: Investigating the Moderating Role of Race*. Springer Science and Business Media LLC. https://doi.org/10.21203/rs.3.rs-5754136/v1

Gamieldien, A. (2025). The relationship between frailty, mental health symptoms and cardiometabolic risk factors with carotid artery measurements in a South African Urban and rural population. In *Atherosclerosis* (Vol. 407, hal. 120028). Elsevier BV. https://doi.org/10.1016/j.atherosclerosis.2025.120028

Geddes, I., Chatzichristou, C., Charalambous, N., & Ricchiardi, A. (2024). Agency within Neighborhoods: Multi-Scalar Relations between Urban Form and Social Actors. In *Land* (Vol. 13, Nomor 3, hal. 269). MDPI AG. https://doi.org/10.3390/land13030269

Ghosh, S. (2024). Water Management Practices in Master-Planned Developments and Eco-Neighborhoods. In *Encyclopedia of Sustainable Technologies* (hal. 803–819). Elsevier. https://doi.org/10.1016/b978-0-323-90386-8.00074-7

Grebe, G. P. M., & Marx, J. (2023). The Perceived Relationship between Risk Culture and Operational Risk Management Practices of Ghanaian Banks. In *Journal of Risk and Financial Management* (Vol. 16, Nomor 9, hal. 407). MDPI AG. https://doi.org/10.3390/jrfm16090407

Gucciardi, E., Vogt, J. A., Melo, M. De, & Stewart, D. E. (2023). *Exploration of the Relationship Between Household Food Insecurity and Diabetes in Canada*. Ryerson University Library and Archives. https://doi.org/10.32920/14639430

Guégan, J.-F. (2024a). *Decision letter for "Climate change is aggravating dengue and yellow fever transmission risk."* Wiley. https://doi.org/10.1111/ecog.06942/v4/decision1

Guégan, J.-F. (2024b). *Decision letter for "Climate change is aggravating dengue and yellow fever transmission risk."* Wiley. https://doi.org/10.1111/ecog.06942/v3/decision1

Gwenzi, W., Simbanegavi, T. T., & Rzymski, P. (2023). Household Disposal of Pharmaceuticals in Low-Income Settings: Practices, Health Hazards, and Research Needs. In *Water* (Vol. 15, Nomor 3, hal. 476). MDPI AG. https://doi.org/10.3390/w15030476

Harnphattananusorn, S. (2025). Relationship between Household Debt and Income Inequality: TVP-VAR Approach. In *ABAC Journal* (Vol. 45, Nomor 4). Assumption University. https://doi.org/10.59865/abacj.2025.34

He, D., Sheng, Z., & Tian, C. (2025). Correction: Examining the U-shaped relationship between non-agricultural sources water pollution and the urban-rural income gap. In *PLOS ONE* (Vol. 20, Nomor 3). Public Library of Science (PLoS). https://doi.org/10.1371/journal.pone.0320587

K, D. S., A, D. V., & Purty, D. A. J. (2025). ENVIRONMENTAL RISK MAPPING FOR DENGUE

TRANSMISSION AND PREVENTIVE PRACTICES IN AN URBAN AREA OF PUDUCHERRY. In *Journal of Population Therapeutics and Clinical Pharmacology* (Vol. 32, Nomor 4). Green Publication. https://doi.org/10.53555/7nfbzx92

Kumar, S., & Mehta, D. M. (2023). Best Practices for Maintaining the Good Relationship Between Principals and Academic Staff. In *Educational Administration Theory and Practices*. Green Publication. https://doi.org/10.53555/kuey.v29i4.1821

Kurpiel, A., & McVie, S. (2025). The Relationship Between Dimensionality and Duration of Household Poverty During Childhood and Onset of Youth Offending. In *CrimRxiv*. PubPub. https://doi.org/10.21428/cb6ab371.63816e5d

Langemeier, M. (2024). Examining the Relationship between Crop Net Returns, Risk, and Conservation Practices. In *Agricultural Sciences*. IntechOpen. https://doi.org/10.5772/intechopen.112263

Mabrouk, M. (2025). Spatial justice and climate vulnerability: Evaluating the relationship between urban expansion patterns and flood risk. In *Societal Impacts* (Vol. 6, hal. 100147). Elsevier BV. https://doi.org/10.1016/j.socimp.2025.100147

Mekuria, W., Hagos, F., Nigussie, L., Admasu, W., & Bitew, A. (2024). *Impacts of landscape and household climate-smart water management practices in the Awash River Basin, Ethiopia*. International Water Management Institute (IWMI). https://doi.org/10.5337/2024.214

Michaels, S. (2023). Differentiating between urban flood risk as a unitary problem and as a strand in a braided problem set: Implications for administrative coordination. In *PLOS Water* (Vol. 2, Nomor 3). Public Library of Science (PLoS). https://doi.org/10.1371/journal.pwat.0000090

Movassagh, A., Corredor, B. B., & Hamer, M. (2025). *Promoting Carbon Storage and Health in Urban Soils through Sustainable Management Practices * Copernicus GmbH. https://doi.org/10.5194/egusphere-egu24-13244

Naz, F., Araújo, J., Oliveira, S., Celina, S., Urban, A., & Černý, J. (2025). *Links between weather variability and Dengue outbreaks in Sao Paulo, Brazil*. Copernicus GmbH. https://doi.org/10.5194/egusphere-egu24-3061

Nidhom, M., & Nurcahyani, D. (2025). COMMUNITY PERCEPTIONS OF WASTE MANAGEMENT PRACTICES: A QUALITATIVE STUDY IN URBAN NEIGHBORHOODS. In *Journal of Multidisciplinary Research* (hal. 34–44). JF Publisher. https://doi.org/10.56943/jmr.v4i2.864

Office, R. S. O. S. E. (2025). *Decision letter for "Non-household environments make a major contribution to dengue transmission: implications for vector control."* The Royal Society. https://doi.org/10.1098/rsos.241919/v2/decision1

Ou, Y., Cai, Z., & Wu, Q. (2025). Resilience Value and Recovery: The Symbiotic Relationship between Classical Gardens of Suzhou and the Historic Urban Water System. In *Blue Papers* (Vol. 4, Nomor 2). UNESCO Chair Water, Ports and Historic Cities. https://doi.org/10.58981/bluepapers.2025.2.15

Peña-García, V. H., LaBeaud, A. D., Ndenga, B. A., Mutuku, F. M., Bisanzio, D., Andrews, J. R., & Mordecai, E. A. (2025). *Author response for "Non-household environments make a major contribution to dengue transmission: implications for vector control."* The Royal Society. https://doi.org/10.1098/rsos.241919/v2/response1

Pisa, P. F. (2023). *Understanding Memory Transmission in Disaster Risk Reduction Practices: A Case Study from Japan*. Elsevier BV. https://doi.org/10.2139/ssrn.4401523

Pswarayi, Z. R., Hoko, Z., Mbiza, H., & Lark, R. M. (2023). *Assessment of the Impacts of Household Storage Tanks on Drinking Water Quality: A Case of Marondera, Zimbabwe*. Elsevier BV. https://doi.org/10.2139/ssrn.4585314

Qu, A. (2024). Relationship between climate change risk perception, mental health, and differences in urban environments. In *Proceedings of the 60th ISOCARP World Planning Congress*. ISOCARP. https://doi.org/10.47472/7jxk6ufd

R, K. K., V, K. G., S, A. K. T., & Joyse, T. J. (2025). A Study of Relationship between Various Platelet Indices and Outcome of Dengue Fever in Pediatric Patients. In *International Journal of Science and Research (IJSR)* (Vol. 14, Nomor 4, hal. 470–477). International Journal of Science and Research. https://doi.org/10.21275/sr25404114921

Rabelo, R. (2023). *Review for "Climate change is aggravating dengue and yellow fever transmission risk."* Wiley. https://doi.org/10.1111/ecog.06942/v2/review2

Rahmawati, E., Nurhayati, E., & Sutriswanto, S. (2025). Risk of pulmonary tuberculosis transmission among household contacts. In *ELECTRON (Journal of Science and Technology)* (Vol. 7, Nomor 1). Yayasan Ahmad Mansyur Nasirah. https://doi.org/10.53770/electron.v7i1.515

Rania, P., & Junaid, Y. (2025). Analysis of the Relationship between Waste Management Systems and Dengue Fever Cases in Urban Areas. In *Magenta Journal De Healthymedi* (Vol. 2, Nomor 4, hal. 179–192). Newinera Publisher. https://doi.org/10.37899/mjdh.v2i4.291

Rui, J., & Li, X. (2024). Decoding vibrant neighborhoods: Disparities between formal neighborhoods and urban villages in eye-level perceptions and physical environment. In *Sustainable Cities and Society* (Vol. 101, hal. 105122). Elsevier BV. https://doi.org/10.1016/j.scs.2023.105122

Salinas, J. P. (2025). Sustainable Water Consumption Practices among Household Consumers: A Systematic Literature Review. In *Advances in Research* (Vol. 26, Nomor 4, hal. 480–489). Sciencedomain International. https://doi.org/10.9734/air/2025/v26i41427

Sandhage-Hofmann, A. D., Mira, F., Vanessa, A., Jan, B., Bisrat, G., & Wulf, A. (2025). *Unraveling the relationship between rural farm household wealth, carbon storage, and soil quality in Namibia's Zambezi Region*. Copernicus GmbH. https://doi.org/10.5194/egusphere-egu24-10503

Sankalp, S., & Sahoo, S. N. (2023). An automated approach to establish relationship between total and effective impervious area for urban Indian catchments. In *Urban Water Journal* (Vol. 21, Nomor 1, hal. 18–32). Informa UK Limited. https://doi.org/10.1080/1573062x.2023.2255168

Sekaran, S. D. (2023). *Review 1: "Identifying the Role of Household Immunity in Driving Individual Dengue Virus Infection Risk."* MIT Press. https://doi.org/10.1162/2e3983f5.122c2881

Severini, E., Magri, M., Soana, E., Bartoli, M., Faggioli, M., & Celico, F. (2023). Irrigation practices affect relationship between reduced nitrogen fertilizer use and improvement of river and groundwater chemistry. In *Agricultural Water Management* (Vol. 289, hal. 108564). Elsevier BV. https://doi.org/10.1016/j.agwat.2023.108564

Srisuwan, A. (2024). Urban water security in multidisciplinary practices: A case of Lamphun Municipality, Thailand. In *Journal of Urban Management* (Vol. 13, Nomor 3, hal. 456–468). Elsevier BV. https://doi.org/10.1016/j.jum.2024.06.002

Syaputri, D., Soedjadi, T. T. B., Manalu, S. M. H., Tanjung, R., & Rosana, D. (2023). The Relationship Between Household Drinking Water Quality and The Incidence of Stunting. In *Contagion: Scientific Periodical Journal of Public Health and Coastal Health* (Vol. 5, Nomor 1, hal. 1). UIN Sumatera Utara Medan. https://doi.org/10.30829/contagion.v5i1.14890

Tang, B. (2023). Neighborhood Conflict Resolution. In *Governing Neighborhoods in Urban China* (hal. 66–87). Cornell University Press. https://doi.org/10.7591/cornell/9781501769269.003.0004

Tasleem, M. (2023). *Review of: "Mediating Role of Outsourcing on The Relationship Between Lean Manufacturing Practices and Profitability."* Qeios Ltd. https://doi.org/10.32388/r70iu6

Thomas-Possee, M. L. H., Channon, A. A., Bain, R. E. S., & Wright, J. A. (2024). Household,

neighbourhood and service provider risk factors for piped drinking-water intermittency in urban and peri-urban Zambia: A cross-sectional analysis. In *PLOS Water* (Vol. 3, Nomor 2). Public Library of Science (PLoS). https://doi.org/10.1371/journal.pwat.0000127

Tobías, M., & Moreno, L. (2025). 'Without Water, There is no life' Urban struggles for water access and processes of citizenship construction in marginalized neighborhoods in Argentina (1970 – 2000). In *Flux* (Nomor 1, hal. 49–62). CAIRN.INFO. https://doi.org/10.3917/flux1.139.0047

Toit, J. du. (2025). Urban household uptake of water-sensitive urban design measures in the context of an applied water demand management study. In *Journal of Environmental Planning and Management* (hal. 1–19). Informa UK Limited. https://doi.org/10.1080/09640568.2025.2586549

Tu, J., Downes, N. K., Warth, G., Obaitor, O. S., Reimuth, A., Sairam, N., Tan, D. L. H., Nguyen, H. Q., Kreibich, H., & Garschagen, M. (2025). Exploring the relationship between urban morphology types and household-level flood vulnerability profiles in Ho Chi Minh city. In *International Journal of Disaster Risk Reduction* (Vol. 131, hal. 105911). Elsevier BV. https://doi.org/10.1016/j.ijdrr.2025.105911

Tu, J., Reimuth, A., & Garschagen, M. (2025). *Exploring the relationship between urban morphology types and household-level flood vulnerability profiles in Ho Chi Minh City*. Copernicus GmbH. https://doi.org/10.5194/egusphere-egu24-16498

Tucker, A. (2023). Enabling connections between a multi-country urban research programme and the practices of an African urban research centre. In *npj Urban Sustainability* (Vol. 3, Nomor 1). Springer Science and Business Media LLC. https://doi.org/10.1038/s42949-023-00099-9

Ullah, M. (2023). *Review of: "Mediating Role of Outsourcing on The Relationship Between Lean Manufacturing Practices and Profitability."* Qeios Ltd. https://doi.org/10.32388/2tkstp

Vásquez, W. F., Leiva, B., Aksan, A.-M., & Houtven, G. Van. (2025). Herding Behavior in Household Water Storage: A Spatial Analysis of Guatemala City. In *Water Economics and Policy*. World Scientific Pub Co Pte Ltd. https://doi.org/10.1142/s2382624x25400193

Widiyana, D. A., Deniati, K., & Dedu, B. S. S. (2024). RELATIONSHIP BETWEEN THE LEVEL OF PUBLIC KNOWLEDGE ABOUT DENGUE FEVER AND DENGUE PREVENTION EFFORTS IN LEMAH DUHUR VILLAGE, KARAWANG. In *Jurnal Medicare* (Vol. 3, Nomor 2, hal. 71–86). Rena Cipta Mandiri. https://doi.org/10.62354/jurnalmedicare.v3i2.53

Yang, W., Li, Z., & Wang, L. (2024). IMPACTS OF RISK PREFERENCE AND SOCIAL INSURANCE ON HOUSEHOLD FINANCIAL MARKET PARTICIPATION IN CHINA: ARE THERE DIFFERENCES BETWEEN URBAN AND RURAL RESIDENTS? In *Applied Finance Letters* (Vol. 13, hal. 2–13). Auckland University of Technology (AUT) Library. https://doi.org/10.24135/afl.v13i.713

Yoon, D. W., & Hanna, S. D. (2024). The Relationship between Self-Control Factors and Household Saving Behavior. In *SSRN Electronic Journal*. Elsevier BV. https://doi.org/10.2139/ssrn.4779111

Zahra, D. N., & Margo, E. (2025). Relationship Between Nutritional Status and Severity of Dengue in Children. In *International Journal of Integrative Sciences* (Vol. 4, Nomor 12, hal. 2997–3006). PT Formosa Cendekia Global. https://doi.org/10.55927/ijis.v4i12.765

Zhang, J. (2023). *Review of: "Mediating Role of Outsourcing on The Relationship Between Lean Manufacturing Practices and Profitability."* Qeios Ltd. https://doi.org/10.32388/ihol8r