



# A Theoretical Framework for Analysing the Adoption of Insecticide-Treated Durable Wall Linings for Malaria Control in Sahelian Semi-Permanent Housing: An African Perspective

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## Abstract

Malaria remains a significant public health burden in the Sahelian region. Insecticide-treated nets are common, but complementary tools are needed. Insecticide-treated durable wall linings (ITWLs) are a potential intervention for prevalent semi-permanent housing, yet their potential adoption is poorly understood theoretically. This article develops a theoretical framework to systematically analyse factors influencing the adoption of ITWLs for malaria control in Sahelian semi-permanent housing, using Egypt as a case study. It integrates constructs from established adoption theories into a context-specific model. A narrative synthesis approach was employed. Theoretical constructs were drawn from the Diffusion of Innovations theory, the Health Belief Model, and the Theory of Planned Behaviour. These were integrated and adapted based on a review of socio-cultural, economic, and environmental factors specific to Sahelian communities and housing. Key insights: The framework identifies perceived compatibility with local housing materials and construction practices as a critical determinant of adoption. A key insight is that adoption may be hindered if ITWLs are perceived to disrupt traditional aesthetic values or social practices related to the home. The framework offers a structured, multi-dimensional lens for investigating ITWL adoption, moving beyond a purely technological evaluation. It underscores the necessity of viewing housing as a socio-technical system within malaria control strategies. Future research should apply this framework in formative studies to identify context-specific barriers and enablers. Programme planners should use these insights to co-design implementation strategies with communities, ensuring ITWLs are acceptable within local housing paradigms. malaria control, vector control, durable wall lining, adoption, theoretical framework, Sahel, housing This work provides a novel theoretical framework for analysing the adoption of a specific malaria control intervention within the context of Sahelian housing, bridging a gap between technological innovation and socio-behavioural science.

**Keywords:** *Malaria control, Sahel, Theoretical framework, Technology adoption, Insecticide-treated materials, Public health intervention*



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