

The Skeeter Meter: Evaluating Public Behavior Change in Response to West Nile Virus Risk Alerts

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Introduction:

West Nile Virus (WNV) is the leading cause of mosquito-borne illness in the United States, with the highest incidence occurring in Northern Colorado. WNV infection can progress to meningitis, encephalitis, paralysis, and death. The “Skeeter Meter” is a public health messaging tool being tested to alert communities of the presence of WNV-positive mosquitoes. It categorizes local transmission risk as low (yellow), moderate (orange), or high (red). This study aims to assess the impact of risk-level messaging tools on the adoption of protective behaviors against WNV and if behaviors differ across the Skeeter Meter levels.

Methods:

During WNV season, 130 participants in Colorado completed surveys assessing participation in protective behaviors, including avoiding outdoor activity at dusk/dawn, draining standing water, avoiding mosquito-prone areas, wearing long sleeves/pants, and using insect repellent. Behaviors were rated on a scale: 0=never, 1=sometimes, 2=always. A one-way repeated-measures ANOVA was conducted to compare mean behavioral scores across the Skeeter Meter levels. Demographic variables such as age, ethnicity, and presence of children in the household were also collected.

Results:

Participants’ protective behaviors increased significantly across all Skeeter Meter levels. Mean behavioral intention rose from Yellow ($M = 1.29 \pm 0.30$) to Orange ($M = 1.41 \pm 0.34$) to Red ($M = 1.60 \pm 0.33$). The most frequently reported behavior was draining standing water, while the least adopted was limiting outdoor activity.

Discussion:

Skeeter Meter alerts were effective in promoting mosquito-control behaviors. WNV is transmitted by Culex mosquitoes, which breed in permanent standing water like lakes rather than in transient water like birdbaths. Public health messaging should therefore emphasize higher-impact protective measures such as avoiding outdoor activity at dusk and dawn, avoiding mosquito-dense areas, wearing long clothing, and using insect repellent rather than focusing on draining transient standing water.