Indoor Public Health:

Gendered Infrastructures of Epidemic Control

Nida Rehman

A crippling epidemic of dengue fever in Punjab, Pakistan in 2011 prompted the creation of a new socio-technical system of disease surveillance and control, comprising a smartphone application, vector surveillance forms, chemical larviciding, public awareness campaigns, the collection and testing of mosquitoes and larvae, and a hierarchical administrative structure with regular progress review meetings. Crucially, Sanitary Patrol (SP) workers were deputed to conduct door-to-door surveillance: to closely observe, identify, geo-tag and eliminate mosquitoes and larvae clusters (Department of Health 2014).

These workers form a critical component of public-health infrastructure. Moving through urban space with fluorescent vests and brochures, they are responsible not only for disrupting conditions for mosquito breeding but also relay public-health messaging and enable the state's view of epidemiological potentialities. However, unlike AbdouMaliq Simone's (2004) formulation of people as infrastructure, where residents create provisional networks to access services outside of state and formal associations, here health workers' highly codified methods are the very armature for the state to see and govern the city (Rehman 2022).

This codification, the "thickness of definitions and classifications" (Simone 2004: 408), maps onto the social milieu in uniquely gendered ways. Dengue field staff are divided into Indoor and Outdoor Teams, overseen by health inspectors and assigned to particular neighborhoods on the basis of weekly plans that organize field labor according to mosquito breeding cycles.[1] Yet this nomenclature does not reference mosquito habits or habitats, nor interior or exterior spaces. Indoor Teams, comprising two female workers (known as Lady Sanitary Patrol or LSP) and one male worker (Sanitary Patrol or SP), conduct surveillance in private residences, while Outdoor Teams, comprising two SPs visit commercial or public spaces like parks, banks, schools, graveyards, factories and workshops.[2] The categories thus index dominant assumptions about women, space and mobility: that women are the rightful caretakers of domestic environments, that LSPs going into homes preserve female residents' *purdah*,[3] that visiting non-residential sites is inappropriate for LSPs, and that SPs on Indoor Teams provide protection for their female counterparts.[4] The infrastructural framework of dengue control thus rests on and reifies an ideological framework about women's proper placement in space, circumscribed by notions of propriety, respectability and safety.

Scholars have widely noted that disease surveillance procedures aimed at separating humans from mosquitoes and microbes can restructure ecological, labor, gender and social relationships (Beisel 2010, 2015; Nading 2012, 2014; Brown and Kelly 2014). Looking beyond the configuration of surveillance technologies, attention to gendered spatial dimensions reveals more contingent infrastructural relationships – in this case marked by neglect, coercion or hostility on one hand, and affirmation and resistance on the other. The material artifacts, discursive categorizations and institutional frameworks of the dengue control system are undergirded by gendered labor and subjectivities, and layer onto existing infrastructural failures and unevenness in the city. These create a "gendered infrastructural assemblage" (Truelove 2021: 1010) that straddles the boundaries of private and public realms. In the following vignettes, I draw from

A female health inspector holding a Dengue surveillance checklist, while an SP hands her a smartphone to document field conditions on the Dengue Activity Tracking System app.
Photo: Nida Rehman, 2017.

[1] For a fuller account of dengue surveillance methods see Rehman (2022).
[2] The default description of sanitary worker as male belies the crucial role of women health workers in Pakistan.
[3] In South Asia, *purdah* refers to practices around veiling, seclusion and segregation, ostensibly to preserve women's perceived honor.
[4] The acronyms LSP and SP are commonly used within the public-health community.

interviews and fieldwork conducted with dengue field staff (particularly LSPs and women inspectors) in Lahore in 2016 and 2017 to highlight three aspects: the uneven and often hostile infrastructures of urban mobility and public space that women workers negotiate every day, the architectural infrastructures that form a threshold of the indoor and outdoor, and the fractured infrastructures of water access and storage whose maintenance relies on gendered labor inside the home. I end with a note about how, through this negotiation of public and private, the gendered infrastructural labor of mosquito surveillance reconfigures social relations of workers to the state, their communities of practice and urban spaces.

On the Street, at the Threshold, in the Home

A female health inspector walks with an SP, avoiding roadside debris, waste and traffic.
Photo: Nida Rehman, 2017.

Women's access to and movement within public spaces in Pakistan has long been constrained by patriarchal views of propriety and modesty, limited pedestrian and transit infrastructures, and subjection to staring, insults or sexual violence (Khawar 2018; Masood 2018). Female workers, who comprise the majority of the dengue workforce in Punjab, make their way through threatening urban environments during house-to-house surveillance. One LSP, Fareeda,[5] told me: "At times, if I am waiting at the [bus] stop, a man might say he wants to go out [with me]. So, we try not to wait too long by ourselves. If someone is passing by on his motorbike or in his car, he might start to ride around in circles around us, or stand nearby." Such negative experiences are coupled with a lack of mobility options. Despite being state employees, workers are not provided vehicles or a travel allowance. While their male colleagues usually own motorcycles, the women make do by spending extra money on rickshaws, getting rides from SPs or walking long distances.

[5] All names are anonymized.

Crossing the boundary from public to private raises other gendered and classed tensions. Entry into elite and upper-middle class spaces – *barre ghar* ('large houses', in Urdu) and gated compounds – is mediated by domestic staff and architectural boundaries.

It entails long waits or outright refusals of entry. A female inspector highlighted the need to manage such refusals and rudeness by walking a fine line between extreme politeness and professional assertiveness. But this boundary also signals the potential danger of misbehavior or harassment inside. As Fareeda noted, "sometimes the servants are not nice people, sometimes the owners are not nice people … we don't know … If someone wants to do a bad deed, they'll do it, either in words or otherwise." Her colleagues explained that if they were harmed by residents, they had no recourse: "we do the work, we have our orders, but god forbid if anything happens to us inside, our department people don't do anything for us."

A female health inspector waits outside a large entry gate in the August heat.
Photo: Nida Rehman, 2017.
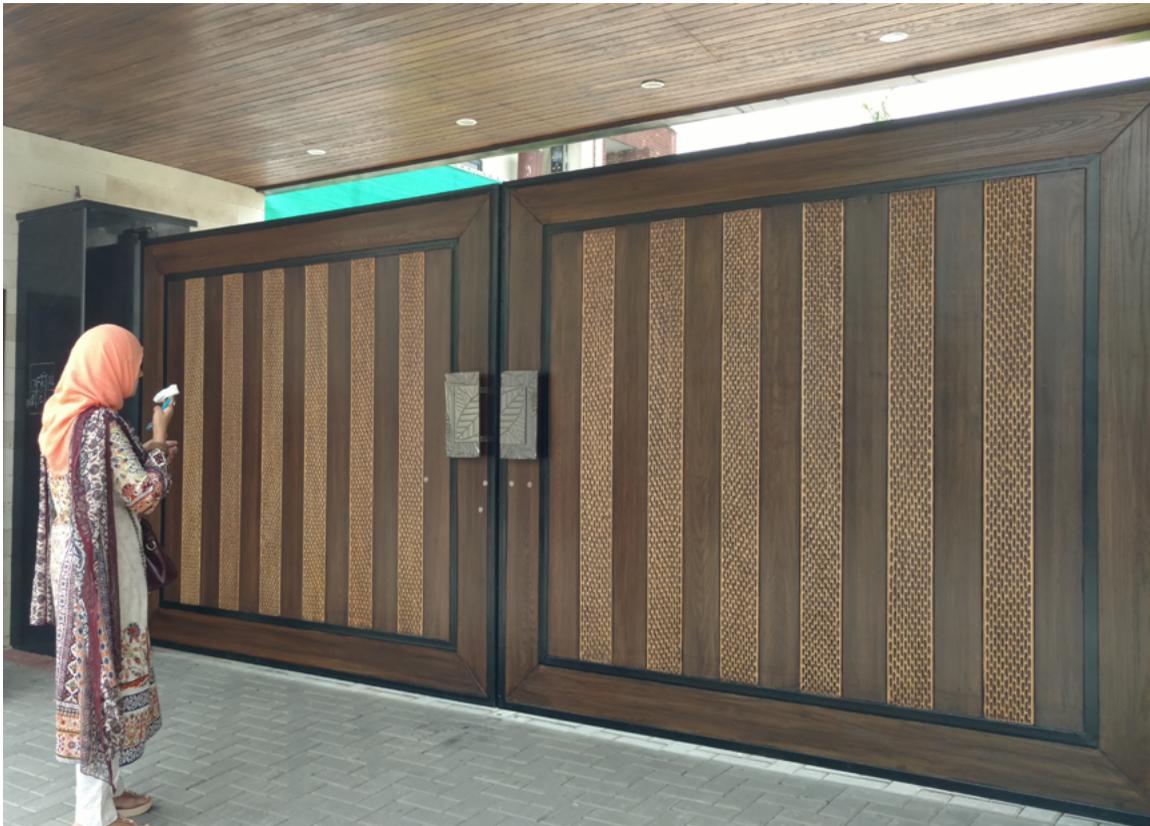
A different set of gendered infrastructural relationships contour the home as a site for dengue surveillance. *Aedes aegypti*, often called a 'domestic mosquito', is attracted to small pools of water: fridge trays, depressions in manhole covers, pet or bird feeding containers, evaporative water coolers, flowerpots, vases and other household receptacles where water is intentionally held or unintentionally stands. In a context marked by widespread failures of water infrastructure, mosquito breeding is closely linked to a variety of individualized mechanisms and practices to manage water shortage. Depending on social class, these range from concrete water tanks to rooftop polymer drums, to buckets or pots. Such household receptacles form key targets for surveillance, and the responsibility to maintain cleanliness falls disproportionately on women. This is reinforced by the LSPs as they conduct surveillance underscoring to women the importance of *khyal* (care) and *safai* (cleanliness/hygiene). With the "absence(s), disconnectedness

A resident helps an LSP inspect inside a water storage drum located next to her outdoor cooking area.
Photo: Nida Rehman, 2017.

and exclusions" of infrastructural systems marking the "intimate material and social relationships of urban life" (Datta 2019) on the street, at the threshold of public or private, or inside the home, differentiations across gender and class lines inevitably shape the localized practices of public-health management.

Contingent Infrastructural Relations

Despite female health workers' centrality to the public-health apparatus and role as government representatives, their relationship to the state remains partial and contingent. Many struggle with financial insecurity and irregular contracts, and must manage everyday challenges of access, security and hostility in the absence of government support. Meanwhile, they also form new, sometimes positive, relationships within their sites of practice. In contrast to refusals and hostile behavior, interactions between LSPs and women residents can sometimes be cordial. Some workers belong to the communities

where they work, or create familiarity and bonds of trust after visiting for extended periods. Female residents might invite LSPs for tea while proudly demonstrating their diligence in clearing mosquito breeding opportunities from their homes. One LSP explained: "I press the doorbell or I just call out, and many of the ladies say 'I only open when I hear your voice. If it is someone else I don't let them visit'."

In negotiating urban space, female workers also try to reclaim time and space. Dengue field staff are mandated to conduct surveillance until a fixed time in the afternoon and visit a set number of houses. Despite their regimented schedules and the socio-spatial impediments of the urban environment, female workers might try to carve out time and stop in a safe place or less frequented park, loosening temporal limitations and claiming rights to public space. The gatherings of female health workers in the city have also taken on a more visible, insurgent, role in protests to demand better labor conditions and the regularization and payment of contracts, which have been met by further state violence. Just as feminists in South Asia have sought to challenge taboos associated with women's presence in urban spaces through small- and large-scale interventions (Phadke and Ranade 2011; Khawar 2018; Kirmani 2018), the movement of female health workers in the street and through public spaces allows the possibility for momentarily holding the mandates of state and society at bay (Parikh 2019) and for more radical acts of resistance. Gendered infrastructures of public health are thus constituted relationally and flexibly across the spatial boundaries and fragmentations of urban and intimate spaces – as female dengue workers translate official procedures into embodied practices, weave their social worlds and lay claim to the city.

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Nida Rehman is a Pakistani-born urban geographer and Assistant Professor in the School of Architecture at Carnegie Mellon University. Her work is concerned with the histories, politics and ecologies of urban landscapes and infrastructures – particularly how environmental imaginaries, governance and experiences are shaped by processes of colonialism and uneven development, and how people engage with urban nature to create possibilities for change. Her recent publications include articles in *Antipode*, *Planning Perspectives*, *Comparative Studies of South Asia*, *Africa and the Middle East* and *The Botanical City* (Jovis 2020). She is the recipient of the 2022 SOM Foundation Research Prize and the 2019 Urban Studies Foundation seminar series award.

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