

Exploring Privacy and Security Perceptions and Practices of Migrant Domestic Workers in Multi-User Smart Homes

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OVERVIEW

Homes globally have increasingly become smarter in recent years. The widespread adoption of smart home devices has significantly amplified privacy, security, and safety (PSS) concerns among various stakeholders, including primary users who actively install and use these devices, secondary users, and incidental users (e.g., [1, 2, 7, 10, 26, 30, 33]). Recent studies have particularly explored the PSS perceptions and practices of vulnerable populations such as people with disabilities [35], children [25, 29, 31, 34], women [18], and older adults [15, 20] living in multi-user smart homes. In particular, research has examined the challenges experienced by **migrant domestic workers (MDWs)**, who frequently deal with power imbalances, invasions of privacy, and a lack of autonomy in their living and working spaces, largely because they have limited or no direct access to employer-installed smart home technologies such as surveillance cameras [5, 6, 8, 9, 19, 21, 22, 28]. Although these challenges have attracted some scholarly attention, far fewer studies have explored them from a non-WEIRD (Western, Educated, Industrialized, Rich, Democratic) perspective [12, 16].

MDWs are generally described as individuals who migrate from areas with limited job prospects to regions with labor shortages [14]. These migrants often need work permits or visas [21], or may be internal migrants within their own countries, for example, rural to urban workers in China [19, 23]. Previous studies have identified challenges facing migrant workers, particularly structural barriers to cultural integration [4, 32] and access to healthcare services [23, 27, 28]. These workers may also be vulnerable to labor exploitation [11, 21] and privacy violations [3, 4, 8, 24]. Specifically, Slupska et al. [28] outlined three key threats to the privacy and security of MDWs in the UK: government surveillance (such as immigration enforcement monitoring via the NHS), online scams and harassment (including identity theft and romance scams), and employer surveillance (for example, extensive use of CCTV cameras and covert recording in private areas). These threats are interconnected and mutually reinforcing, exacerbating the vulnerability of MDWs. He et al. [19] investigated the privacy and security challenges experienced by MDWs in Chinese smart homes, highlighting the influence of cultural factors (such as Confucian values), gaps in legal protections, and power dynamics between employers, workers, and agencies in shaping these experiences.

Previous research has investigated the PSS concerns of MDWs, particularly within employer-controlled smart homes. Although some work has considered how non-WEIRD social norms and cultural factors influence MDWs' PSS perceptions and practices (e.g., studies in Jordan [5, 6]), there remains a lack of investigation into other non-WEIRD contexts, such as China. In 2021, China had 37.6

million MDWs, accounting for roughly 8% of national employment. Among them, 90% were women migrating from rural to urban areas, with 60% having a high school or lower education. The domestic service industry itself comprised 2.6 million companies, most of which were small to medium-sized companies, making up 62% of the sector [13].

However, limited research has examined how MDWs in China perceive and manage PSS, or how they navigate conflicts between PSS expectations in their employers' homes and their own living spaces. It is also unclear to what extent privacy and security considerations - relative to other influencing factors - shape MDWs' decisions around adopting or using smart home technologies (such as security cameras). Moreover, little is known about how Chinese social, cultural, technical, and legal factors (such as gender dynamics and Confucian values like filial piety) influence MDWs' PSS perceptions and practices across both employer and personal home settings.

Furthermore, while previous studies have explored how surveillance contributes to power imbalances between employers and MDWs, the role of domestic worker agencies in these dynamics has been largely overlooked [8, 9, 21, 22]. Our work addresses this gap by examining the multifaceted power relations between MDWs, their families, employers, and agencies, with particular attention to the ways in which surveillance reinforces structural inequalities and the adaptive strategies employed by MDWs in response. To this end, we propose the following research questions (RQs):

- **RQ1.** How do MDWs, their left-behind families, employers, and agencies perceive smart home privacy, and what influences these perspectives?
- **RQ2.** What privacy conflicts arise among MDWs, their families, employers, and agencies within smart homes?
- **RQ3.** What interventions are needed to balance the privacy needs and preferences of MDWs, their families, employers, and agencies in smart homes?

To address these questions, we have investigated the PSS challenges faced by Chinese MDWs [19] and conducted a study in the UK examining cultural and social factors shaping MDWs' privacy practices. Looking ahead, we plan to conduct co-design workshops with MDWs to develop sociotechnical interventions tailored to their privacy and security needs. Additionally, we have studied how Chinese smart home product teams handle privacy and security for various stakeholders, including vulnerable groups like MDWs, offering valuable industry insights [17]. Our comprehensive research seeks to contribute to wider discussions on digital inequality, power relations, and privacy in smart home contexts.

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