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Assessing the antecedents behind after-hours work in teleworkers: a scoping review

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ABSTRACT

Background: Since the start of the COVID-19 pandemic, telework arrangements have become increasingly prevalent, driven by benefits such as greater autonomy, reduced work-related stress, decreased commuting time and cost, and enhanced flexibility. Despite these advantages, teleworkers are more likely to engage in after-hours work, creating additional strain that may impact health and organizational outcomes.
Methods: A systematic search was conducted across seven online databases: Medline via OVID, Embase via OVID, APA PsycINFO via OVID, International Bibliography of Social Sciences via ProQuest, Sociological Abstracts via ProQuest, Business Source Premier via EBSCOhost, and CINAHL via EBSCOhost. Studies were included if they were empirical, peer-reviewed, published between 2010 and 2024, examined the antecedents of after-hours work, and focused on adults aged 18 to 65 engaged in telework. Descriptive thematic analysis was conducted to develop themes and sub-themes.
Results: Findings: A total of 17 studies were included in the review: 13 cross-sectional studies, three qualitative studies, and one longitudinal study. Using the Person–Environment–Occupation framework, three overarching themes were identified: (i) misalignment between personal capacities and occupational demands; (ii) environmental constraints that undermine healthy role balance; and (iii) occupational role strain in the context of remote work.
Conclusions: These findings may help to inform the development of targeted interventions that reduce cases of after-hours work among teleworkers and promote their overall health and well-being. Future research should examine these antecedents in non-Western contexts and explore the interplay between the individual, environmental, and occupational factors shaping after-hours work behaviors.

Keywords: after-hours work; telework; remote work; antecedents; occupational health; person–environment–occupation

Introduction

The structure and delivery of work continue to transform in response to rapid technological progress and shifting societal norms.[1] Telework, which refers to completing work tasks outside of a traditional office setting, most often from home, has become a popular arrangement.[2,3] It typically involves the use of digital communication technologies to collaborate with colleagues, supervisors, and clients remotely.[1,3] With the emergence of the COVID-19 pandemic, many organizations are adopting telework on a large scale to comply with public health mandates.[4] Globally, the OECD reported that ∼40% of employees in advanced economies were working remotely during the peak lockdown periods of the COVID-19 pandemic in 2020.[5] This widespread adoption of telework during the pandemic has contributed to its continued prevalence in the post-pandemic labor landscape, with approximately one in five workers still spending most of their work hours at home by late 2023.[6]

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Several studies have shown that telework offers several benefits compared to working in the office due to its flexibility.[7–9] These include reduced blood pressure, improved health behaviors, a lower risk of depression, better work-life balance, higher job satisfaction, and decreased absenteeism.[7–9] However, the effects of telework are complex, as they depend on both contextual factors and job characteristics.[7,9] While remote work offers many advantages, these benefits can be undermined by factors like working after hours.[7] This phenomenon reflects the 'flexibility paradox', where flexible work can simultaneously enhance work-life balance while also increasing work intensity, such as longer or irregular working hours.[10] Teleworkers are more inclined to work after-hours,[11] or work beyond their scheduled hours, due to the blurred boundaries between the work and home environment.[12] Having the convenience of remote communication allows for continuous connectivity, as employees can remain in contact with work outside of work hours. This in turn can create the feeling of always being 'on-call' and needing to work outside their required hours.[13]

After-hours work has been linked to several adverse outcomes that negatively impact workers' health and well-being. Palma-Vasquez *et al.*[14] reported that those engaged in unpaid overtime work were 2.89 times more likely to have poor mental health outcomes compared to those who did not. Similarly, Magnavita *et al.*[15] found that increased stress levels were associated with working during non-standard work hours, while Afonso *et al.*[16] indicated that workers were more likely to report lower job satisfaction. Regarding physical health, Fiorini[17] identified associations between non-standard working hours and musculoskeletal pain, particularly in the back, neck, and shoulders. Sato *et al.*[18] further linked after-hours work to headaches, likely stemming from the lack of physical activity. Moreno *et al.*[19] also found that working during non-standard working hours was associated with cardiovascular, gastrointestinal, and metabolic disorders, with negative health outcomes being more pronounced among female workers, suggesting gender disparities. Additionally, Grebuel *et al.*[20] reported that working during unusual hours was significantly associated with health-related complaints and an increased risk of occupational accidents. Beyond individual outcomes, after-hours work also has social implications. As teleworking increases the likelihood of working beyond regular hours, work demands may spill over into family life, leading to work–family conflict.[21] Notably, research has shown that women are more likely to experience greater work–family conflict when teleworking,[22] further highlighting potential gender disparities in the effects of after-hours work among teleworkers. Although other potential negative outcomes of teleworking, such as social isolation or disruption of personal purpose during the workday, have been noted, this review focuses specifically on factors contributing to after-hours work and does not prioritize these other issues.

After-hours work is known to have negative impacts on workers' health and well-being[23,24]; however, no review has yet synthesized the factors that contribute to this phenomenon. Given the increase in teleworking arrangements[6,25,26] and the rising occurrence of after-hours work among teleworkers,[27] there is a substantial need to address this gap to optimize the health and productivity of teleworkers. As such, the objective of this scoping review is to identify and analyze the factors that contribute to after-hours work among teleworkers. The study aims to provide a comprehensive understanding of how personal characteristics, work environments, and organizational factors influence the likelihood of teleworkers engaging in working after-hours. Moreover, this review will offer insights into strategies or interventions that can mitigate these risk factors leading to healthier and more productive workers.

Methods

Study design and registration

This scoping review was conducted and reported following the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist[28] (see Supplementary File for completed checklist). This scoping review is registered with Open Science Framework (https://doi.org/10.17605/OSF.IO/MH7QB) and the protocol has been published in a peer-reviewed journal.[29]

Search strategy

The first author developed the search syntax for all databases with the assistance of a librarian at the University of Toronto. The research team reviewed and approved the complete search strategy, which includes terms associated with 'factors' combined with terms related to 'after-hours work' and 'teleworking'. The search was conducted on 31 July 2024, across seven electronic databases: Medline via OVID, Embase via OVID, APA PsycINFO via OVID, International Bibliography of Social Sciences (IBSS) via ProQuest, Sociological Abstracts via ProQuest, Business Source Premier via EBSCOhost, and CINAHL via EBSCOhost. The date range was specified from 2010 onwards to capture the period of increased technological advancements. The search strategy was tailored to each database due to differences in MeSH terms and Boolean operators (Appendix A).

Table 1 PCC framework outline regarding the scoping review.

PCC framework	*Inclusion criteria*	*Exclusion criteria*
Population	Adults aged 18 to 65, engaged in telework (fully remote or hybrid setting which was defined as working both remotely and on-site at least once per week)	Adults < 18 years of age or 18+, but are independent contractors or self-employed and work after hours due to the nature of their job
Concept	Discussing the antecedents of after-hours work on teleworkers	Exploring the consequences of after-hours work on teleworkers rather than the antecedents
Context	Studies published from 2010 to 2024 Empirical (e.g. quantitative or qualitative) and peer-reviewed studies	Research articles published prior to 2010 Unpublished research, opinion pieces, book chapters, conference papers and abstracts, review articles, knowledge syntheses, commentaries, or grey literature

Inclusion and exclusion criteria

The primary finding of the study was defined as 'after-hours work' or comparable terms (refer to Appendix A for a full list of related terms). No regional or geographical restrictions were applied to document various remote work environments. The inclusion and exclusion criteria were classified by the research team using the population, concept, context (PCC) framework (see Table 1).

Data collection

Studies retrieved from the databases were imported into Covidence.[30] After duplicates were removed, title and abstract screening was completed by two reviewers and inter-rate agreement was assessed using Cohen's kappa coefficient.[31] Eligible studies were then assessed in full text. Any conflicts that were not resolved through discussion were addressed by a senior research member.

Data extraction

Once the screening and review phases were completed, two researchers (KB, B-ZSL) independently extracted data from the included articles. Specifically, the data was charted using with the following categories included in the template: (i) title of the study; (ii) author name(s); (iii) publication year; (iv) country of origin; (v) study design; (vi) participant demographics (e.g. age and sex); (vii) study objective(s); (viii) work sector; (ix) sample size; and (x) antecedents of after-hours work among teleworkers. Any disagreements or inconsistencies that arose during the data extraction process were addressed and resolved with contributions from the senior research member (BN-K).

Data synthesis

Following the data extraction stage, the two reviewers compared their results to verify that the study findings were reported accurately and consistently. Descriptive thematic analysis was then conducted using the Braun and Clarke[32] framework as a guide to develop themes and sub-themes. As part of this process, the researchers first reviewed the extracted data and recorded initial impressions and patterns, generating preliminary codes for meaningful data segments. Each code captured a specific concept, factor, or observation related to after-hours work among teleworkers. The team systematically applied these codes across the full dataset, ensuring that all relevant information was captured. Subsequently, codes were examined for similarities, overlaps, or hierarchical relationships and were organized into potential themes and sub-themes. When codes could potentially fit under multiple themes, the research team engaged in iterative discussions to determine the most conceptually appropriate placement, documenting the rationale for each decision to maintain transparency and consistency. All coded data were then reviewed within the context of each proposed theme to confirm that the themes accurately represented the underlying patterns in the literature. During this process, the research team recognized that the emerging themes aligned closely with the Person–Environment–Occupation (PEO) model,[33] which facilitated organizing themes according to the interactions between personal characteristics, environmental conditions, and occupational factors.

The PEO framework offers a theoretical framework to assess the factors associated with after-hours work among teleworkers.[33] Rooted in occupational therapy, the model highlights the transactional relationships between the person, environment, and occupation, which, taken together, shape occupational performance.[33] In this model, the 'Person' refers to an individual with unique qualities, skills, and attributes that take on various roles.[33] The 'Environment' encompasses the physical, social, cultural, institutional, and socio-economic contexts, while the 'Occupation' includes the meaningful activities and tasks individuals engage in.[33]

The model believes that strong alignment across these three domains leads to optimal occupational performance.[33] The PEO framework was selected over other models because it considers the person, environment, and their interactions, providing a holistic perspective, particularly suited to understanding the complexities of telework and after-hours work. In addition, potential gender-related influences associated with telework and after-hours work can be examined through the person component of the framework, highlighting gender as a key determinant. As such, the final themes and subthemes were structured to reflect the person, environment, and occupation components of the model. Following that, the research team validated the themes against both the coded extracts and the complete data set, ensuring that the final thematic structure was both comprehensive and grounded in the data.

Critical appraisal

Critical appraisal of the included studies was conducted using the Agency for Healthcare Research and Quality (AHRQ)[34] for cross-sectional studies and the Newcastle-Ottawa Scale (NOS)[35] for cohort/longitudinal studies. The Critical Appraisal Skills Programme (CASP) tool[36] was used for qualitative research. The reviewers individually assessed each study and disagreements among the reviewers were resolved through discussion.

Results

A total of 2961 records were identified through seven electronic databases: APA PsycINFO ($n = 670$), International Bibliography of the Social Sciences ($n = 600$), Business Source Premier ($n = 598$), Embase ($n = 365$), MEDLINE ($n = 338$), Sociological Abstracts ($n = 240$), and CINAHL ($n = 150$). After removing 870 duplicate records that were automatically identified through Covidence, 2091 records remained for title and abstract screening. Following this screening phase, 1937 articles were excluded for not meeting the inclusion criteria, resulting in 154 studies selected for full-text review. Of the studies, 137 were excluded due to wrong population ($n = 70$), wrong outcomes ($n = 48$), inability to access full text ($n = 9$), wrong study design ($n = 9$), or duplication ($n = 1$). By 'wrong population', we excluded studies that did not clearly specify teleworkers as their study population, since our review focuses on factors influencing after-hours work among this group. By 'wrong outcomes', we excluded studies whose primary focus was on the consequences of after-hours work rather than its antecedents. For example, Graham *et al.*[37] and Henke *et al.*[38] examined health impacts, Spagnoli *et al.*[39] explored workaholism and technostress, and Mofakhami *et al.*[40] assessed gendered health outcomes of telework. While these studies provide valuable insights, they did not investigate the antecedents of after-hours work and were therefore excluded. By 'wrong study design', we excluded non-empirical articles, such as commentaries, theoretical papers, and reviews, which did not present primary data relevant to our research question. Ultimately, 17 studies were included for data extraction and synthesis.[41–57] This selection process is detailed in Fig. 1. Reviewers achieved moderate agreement with kappa statistics being 0.45 for title-and-abstract screening and 0.56 for full-text, with high proportionate agreement of 0.914 and 0.903, respectively.

Study characteristics

The included studies were conducted across diverse international contexts, including the United States,[41,42,56] Australia,[43] United Kingdom,[44,50] Canada,[45,47] Turkey,[54] India,[49,52] Romania,[46] Spain,[48] Iran,[51] Slovenia,[53] Costa Rica,[55] and China.[57] The majority of the studies ($n = 13$) employed a cross-sectional design to explore factors contributing to after-hours work among teleworkers, such as workload demands, organizational culture, and work-home boundary blurring.[41,43,46–48,50–57] In addition, three qualitative studies provided in-depth insights into workers' lived experiences and perceptions regarding the pressures and expectations that lead to unpaid work beyond standard hours,[42,45,49] and one longitudinal study tracked changes over time in telework practices and their association with unpaid labor beyond regular working hours.[44] Included studies encompassed workers from several sectors as per the International Standard Classification Occupations (ISCO),[58] including Managers,[42,49] Professionals,[41–43,45,49–54] Clerical Support Workers,[42,53,56] and Service and Sales Workers.[41] Table 2 provides detailed information on the study characteristics.

Figure 2 presents an overview of the three overarching themes identified from the literature, organized according to the PEO model: (i) misalignment between personal capacities and occupational demands (person), (ii) environmental constraints that undermine healthy role balance (environment), and (iii) occupational role strain in the context of remote work (occupation).

Critical appraisal

The quality of the 13 cross-sectional studies was assessed using the AHRQ checklist (see Appendix B Table 1 for criteria and scoring).[41,43,46–48,50–57] Twelve of these studies were assessed to have a high risk of bias on the item corresponding to blinding outcome assessors,[41,43,46–48,50–56]

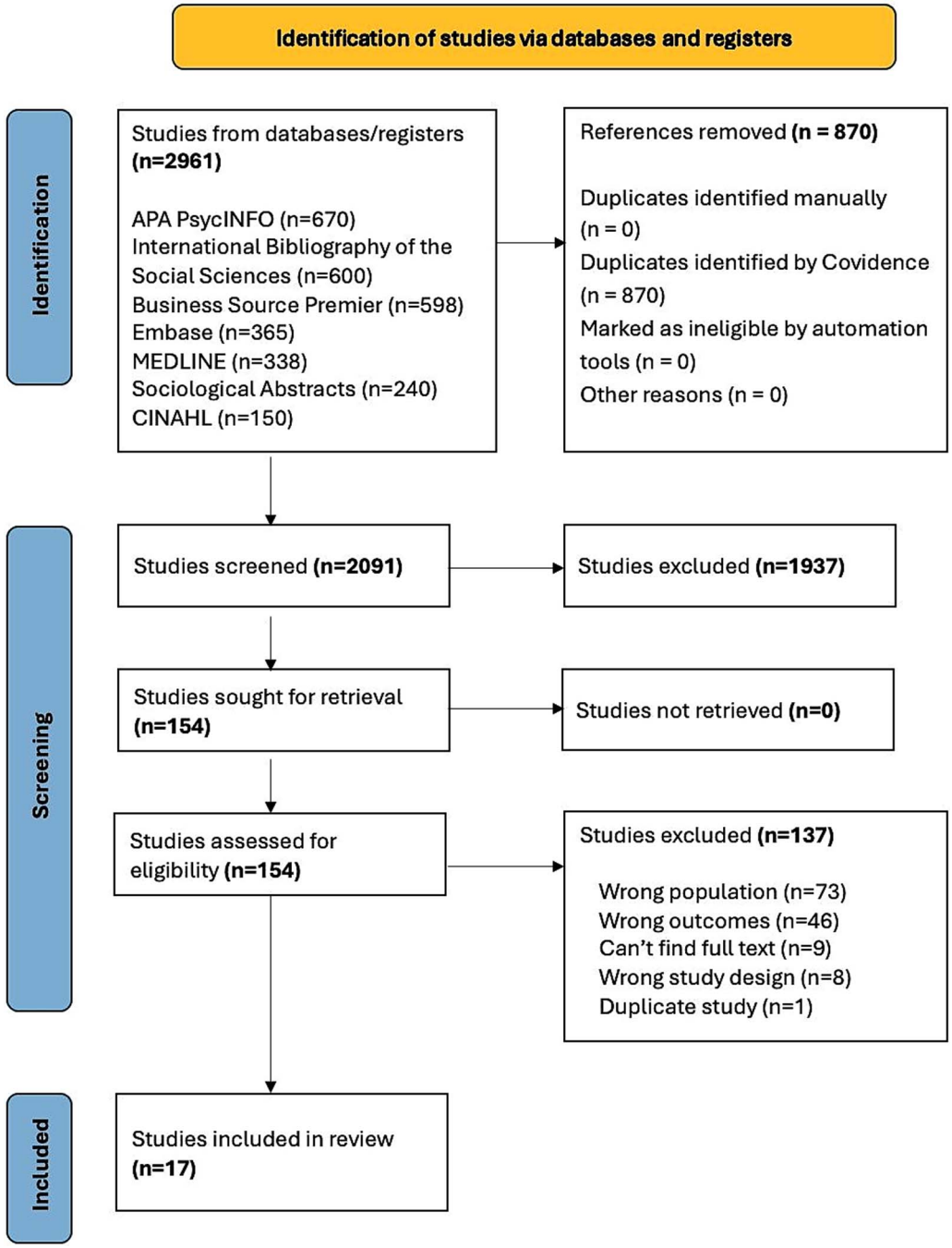

Figure 1 PRISMA flow diagram illustrating the study selection process.

while one study rated it as unclear.[57] All 13 studies were also unclear whether any concurrent interventions or unintended exposures were ruled out.[41,43,46–48,50–57] For the remaining items in the AHRQ, studies generally demonstrated a low to medium risk of bias.[41,43,46–48,50–57] The quality of the three qualitative studies was evaluated using the CASP checklist (see Appendix B Table 2 for criteria and scoring).[42,45,49] Two studies were unclear on two items of the criteria,[42,45] while one study was unclear on a single item.[49] One longitudinal study was assessed using the NOS (see Appendix B Table 3 for criteria and scoring).[44] All domains received at least one star, indicating low risk of bias, except for the assessment of outcome, which was rated lower due to reliance on self-reported data.[44] The overall risk of bias across the studies included was categorized to be low to moderate, suggesting acceptable methodological quality despite a few common limitations.

Table 2 Characteristics of studies (n = 17) analyzing the antecedents of after-hours work among teleworkers.

Author, year	*Country*	*Study design*	*ISCO major group code and classification*	*Amount of telework*	*Mean age (range); sex*	*Sample size*
Awada et al., 2021[41]	United States	Cross-sectional study	2—professionals 5—services and sales workers	Fully remote	40.9 (18–80); 32% men and 56% women and	988
Brumley et al., 2021[42]	United States	Qualitative study	1—managers 2—professionals 4—clerical support workers	NA[a]	37.9 (26–58); 100% women	21
Cannizzo and Osbaldiston, 2016[43]	Australia	Cross-sectional study	2—professionals	NA[a]	NA[a]; 44% men and 56% women	155
Chung and Van Der Horst, 2020[44]	United Kingdom	Longitudinal study	NA[a]	NA[a]	NA[a] (18–65); 48% men and 52% women	30 761
De Laat, 2023[45]	Canada	Qualitative study	2—professionals	NA[a]	NA[a] (20–60+); 51% men and 49% women	84
Dimian et al., 2023[46]	Romania	Cross-sectional study	NA[a]	Fully remote	NA[a]; 27% men and 73% women	200
Duxbury and Halinski, 2014[47]	Canada	Cross-sectional study	NA[a]	At least 1 hour per week	45.1 (NA[a]); 40% men and 60% women	25 021
González Ramos and García-de-Diego, 2022[48]	Spain	Cross-sectional study	NA[a]	NA[a]	NA[a] (18–50+); 47% men and 53% women	92 269
Javad et al., 2023[49]	India	Qualitative study	1—managers 2—professionals	Fully remote	34.14 (26–42); NA[a]	14
Kabir et al., 2023[50]	United Kingdom	Cross-sectional study	2—professionals	NA[a]	NA[a] (25–65+); 63% men, 36% women, and 1% non-binary/prefer not to say	180
Kalani et al., 2024[51]	Iran	Cross-sectional study	2—professionals	Fully remote	NA[a]: 53.58% men and 46.41% women	237
Krishnan et al., 2024[52]	India	Cross-sectional study	2—professionals	NA[a]	NA[a] (25–65); 39.92% men and 60.09% women	456
Mar and Buzeti, 2021[53]	Slovenian	Cross-sectional study	2—professionals 4—clerical support workers	NA[a]	NA[a]; NA[a]	1676
Şimşek Demirbağ and Demirbağ, 2022[54]	Turkey	Cross-sectional study	2—professionals	Fully remote	36 (NA[a]); 54.2% men and 45.8% women	400
Solís, 2016[55]	Costa Rica	Cross-sectional study	NA*	Average of two days per week	41.60 (NA[a]); 39% men and 61% women	142
Tedone, 2022[56]	United States	Cross-sectional study	4—clerical support workers	Fully remote	45.31 (22–75); 26% male and 76% female	173
Yang et al., 2022[57]	China	Cross-sectional study	NA[a]	Fully remote	NA[a] (18–60); 47% men and 55% women	257

ISCO: International Standard Classification Occupations; NA: not available.

[a]Not indicated or unclear in the article.

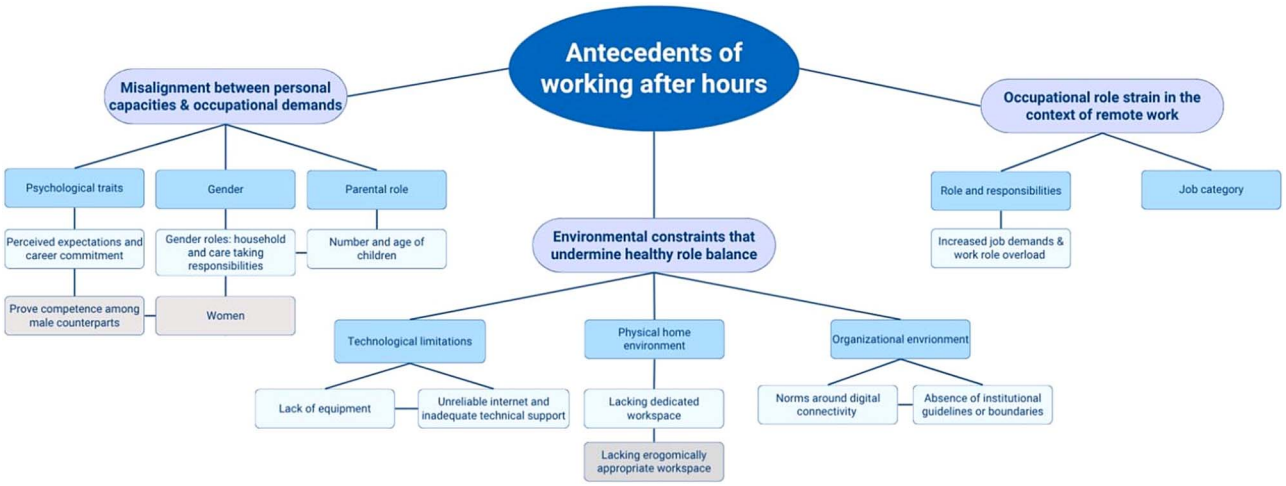

Figure 2 Concept map of identified themes of antecedents to after-hours work among teleworkers.

Theme 1: misalignment between personal capacities and occupational demands

A total of eight studies examined the relationship between personal characteristics (parental role, psychological traits, gender) and engagement in after-hours work.[41–46,48,49] Of these, five studies examined the impact of parental roles on after-hours work among teleworkers.[41,43,44,46,48] Among the five studies, three found that teleworkers with children were more likely to work after hours,[41,46,48] with one explaining how sharing the workplace with their children led to frequent distractions.[41] The study also indicated that the age of children plays a key factor, with a younger child age being associated with a higher tendency to work after hours.[41] Despite this, two studies revealed contrasting results where workers without children were more likely to work longer hours than those with children.[43,44]

Three of the eight studies indicated how psychological traits influenced whether workers engaged in after-hours work.[42,45,49] One study revealed that perceived expectations and immense levels of telepressure made workers feel the need to remain readily available, prompting them to work beyond the expected hours.[42] Participants from another study reported that they immediately respond to work messages and emails received after hours to avoid negative impressions from their employers.[49] Furthermore, one study found that career commitment was a strong facilitator of working after hours, as it provided an opportunity to allocate more time to work and display their dedication.[45]

Six studies examined the role of gender in workers' engagement in after-hours work.[41,42,44–46,48] These studies found that the relationship between personal characteristics, including parental role and psychological traits, was more pronounced in women than men.[41,42,45,46,48] For instance, studies found that more women struggled to maintain work-life balance due to household and caretaking responsibilities, causing work to spill over.[41,46,48] Likewise, women were more likely to work after-hours because of a greater perceived expectation of having to be readily available,[42] as well as the need to showcase their commitment to work to prove they are as competent as their male counterparts.[45] However, one study in particular found that men were more likely to work after-hours when they had greater control over their work schedule.[44]

Theme 2: environmental constraints that undermine healthy role balance

Four studies described how the role of environmental constraints contributes to after-hours work among teleworkers.[41,42,45,52,53,55,56] These constraints refer to physical, technological, and organizational conditions that shaped how and where work was conducted. In particular, the physical home environment was frequently described as poorly suited for sustained work, with many participants lacking dedicated or ergonomically appropriate workspaces.[42] This led to interruptions and inefficiencies during regular work hours, often prompting individuals to extend their work into personal time.[41] In addition, technological limitations—such as unreliable internet, lack of equipment, or inadequate technical support—were reported as barriers that delayed task completion during work hours, increasing reliance on unpaid time to meet job demands.[45] Moreover, one study highlighted that exclusive workspaces decreased the likelihood of working after hours.[55] Broader social features of the work environment, such as the urge to respond promptly

due to workplace expectations, were also linked to unpaid after-hours work.[53,56] Collectively, these environmental factors created conditions where completing core work responsibilities during scheduled hours became difficult, fostering reliance on unpaid after-hours work as a coping mechanism.

Theme 3: occupational role strain in the context of remote work

Six studies discussed the relationship between occupation and working after hours.[41,43,44,47,50,51,54,57] Three studies reported the influence of the job category or position in the context of working after hours. For example, Awada *et al*.[41] found that remote workers in healthcare, social services, education, and arts spent more time working than other job groups compared to pre-pandemic hours. Findings from another study suggest that men in managerial positions appear to be one of the working groups where having schedule control led to more unpaid work hours.[44] Among a sample of Australian academics, those doing research-only positions reported longer working hours compared to those who were teaching.[43] Almost 44% of gastroenterologists and hepatologists in a study by Kabir *et al.*[50] had a regular increase in out-of-hours working, due to reasons such as adopting additional leadership roles and having extra clinical sessions to deal with the backlog. Similar themes of working after hours due to work role overload and increased job demands are reported across other studies.[47,51,54,57]

Discussion

Main findings of this study

Utilizing the PEO framework,[33] our review identified key three themes regarding the antecedents of working after hours among teleworkers: the misalignment between personal capacities and occupational demands, environmental constraints, and occupational role strain. These themes align with the person, environment, and occupational components of the framework, indicating that the factors contributing to after-hours work operate across multiple levels.

What is already known on this topic

Compared to the pre-pandemic period, there has been a surge in remote work opportunities for workers. A study found that, across 20 countries, the job postings of work-from-home positions increased from 2.5% to 11% between January 2020 and January 2025.[59] In Canada specifically, 20% of workers currently work from home as of November 2023—a major increase from May 2016, which was merely 7%.[6] Similarly, in the United States, 22.1% of workers reported teleworking or working at home for pay, as of July 2025.[60] Although, the initial increase in telework was to adhere to the public health restrictions, many companies have continued this arrangement due to the various benefits such as saving time and money,[61] and having greater autonomy, flexibility, and concentration.[62] In fact, 85% of surveyed workers believed that telework would be here to stay given these positive aspects.[63]

Despite these advantages, teleworking has been found to increase incidences of after-hours works among individuals, ultimately impacting their health and well-being. Regarding mental health, after-hours work has been associated with occupational stress, anxiety, depression, and reduced happiness among teleworkers.[15] Additionally, a systematic review conducted by Wells *et al.*[64] highlighted that telework in general can lead to several physical health concerns such as back pain, neck pain, headaches, and vocal tract discomfort, particularly when working in poorly designed ergonomic environment. As a result, teleworking extended periods of time may potentially exacerbate these symptoms, further impairing the physical health of workers. Interestingly, Schwarz & Abendroth[21] found that although formal teleworking was linked to fewer work–family conflicts, informal telework, or overtime work, is associated with greater work–family conflicts. Taken together, these implications may in turn also impact organizational outcomes, such as productivity levels.

What this study adds

To our knowledge, this is the first scoping review to examine the factors associated with working after hours among teleworkers. These findings can inform the development of targeted interventions aimed at reducing after-hours work, thereby improving the occupational performance and overall health of workers. Our findings identified several personal factors, such as having children, psychological characteristics, and gender, that influence a worker's tendency to engage in after-hours work. Workers with children were more likely to engage in after-hours work, with one study attributing this to frequent distractions during regular work hours caused by childcare responsibilities. This finding aligns with existing literature indicating that teleworkers frequently experience interruptions from children and other family members, making it difficult to work.[65–67] Additionally, our review highlighted that telepressure and greater expectations surrounding remote work increased the likelihood of after-hours engagement. Barsness *et al*.[68] further supports this by noting that remote workers, due to their physical absence from the workforce, may feel compelled to engage in impression management, such as increased communication and constant availability, to demonstrate productivity.

Gender disparities were also noted, with women more likely to engage in after-hours work than men. Traditional gender roles position women as primary caregivers, leading them to shoulder a disproportionate share of domestic labor alongside full-time employment.[69] Furthermore, workplace cultures, particularly in male-dominated fielded, may implicitly require women to demonstrate greater commitment and competence due to them being undervalued in the workplace.[70] Taken together, these social pressures reflect broader structural and patriarchal norms that shape both household responsibilities and organization practices, contributing to women's heightened engagement in after-hours work. As such, recognizing the role of gender norms is essential for understanding these disparities and informing policies that promote equitable work environments.

Environmental constraints also contributed to after-hours work. In particular, the physical home environment was ineffective for work, creating delays and difficulties in completing work duties. For example, technology-related limitations were barriers to completing specific tasks within work hours.[45] The type of work environment at home can also impact productivity as the physical boundaries between work and home life are blurred.[47] As distractions are a common issue among teleworkers, creating workspaces with ergonomic design in mind can help mitigate the adverse effects of working from home.[71]

Our findings also indicate that specific occupational characteristics, including increased schedule control, seniority of position, elevated work demands, and certain occupational sectors, can contribute to increased after-hours work among teleworkers. Individuals with greater control over their schedule may be more inclined to extend their work beyond the standard hours due to flexibility to structure their time. Similarly, with higher-level positions leading to increased after-hours work, this can be explained by motivational factors (e.g. work achievements, personal growth) or hygiene factors (e.g. salary, benefits, interpersonal relationships). Elevated work demands may also arise when teleworkers spend time doing nonwork-related tasks during work hours[72] or encountering ineffective management practices, contributing to increased pressures or expectations to take on additional responsibilities.[73,74] Moreover, from our current review, Awada *et al.*[41] found that participants working from home in healthcare and social services and education and arts spent more time working than other categories compared to pre-pandemic. The findings[75] highlight how engagement in telework differ across occupations likely due to the nature of their work. For instance, workers in the healthcare and education industry often face increased job demands,[76,77] potentially causing work to spill over.

In addition to occupation type, the intensity of telework (e.g. number of telework days) can also influence work intensity and burnout, highlighting that telework practices themselves act as environmental constraints.[78] Moreover, managerial control styles play a role, as how managers enact control and support in teleworking contexts can shape employee well-being and performance.[79]

Limitations

Despite these strengths, several limitations should be acknowledged. First, most of the studies included in our review originated from Western countries. This western bias may limit the generalizability of our findings, as work behaviors and experiences may differ in countries of the Global South and East due to varying cultural, social, and economic contexts. Furthermore, while the PEO Model emphasizes the dynamic and transactional relationship between its three domains, the included studies considered personal, environmental, and occupational factors as distinct rather than part of a dynamic system. Given the limited investigation into how these factors interact to influence after-hours work, this restricts our ability to fully capture their complex nature. Moreover, limited studies in our review focused on hybrid telework models or clearly specified the extent of teleworking. As a result, we were unable to compare how varying amounts of telework may influence factors associated with after-hours work. To ensure consistency and comparability across findings, this review focused exclusively on studies that explicitly examined after-hours work. With excluding related research addressing adjacent concepts, this can potentially limit the breath of insights captured.

Given the lack of studies conducted in the Global South, future research should explore the factors associated with after-hours work among teleworkers in these regions. Investigating this area would contribute to a more comprehensive understanding of after-hours work by examining regional differences and the potential influence of cultural, economic, and social contexts. Additionally, future studies should aim to examine the interrelationships among factors across the person, environment, and occupation domains. Understanding how these factors interact to shape different after-hours work outcomes can offer deeper insight into the multi-faceted nature of this issue, which can support the development of more targeted and contextually relevant interventions. Furthermore, given the significant limitations of the studies included in our review, there is a strong need for higher-quality research to address these knowledge gaps.

Conclusion

The findings from this review can inform the development of policies and practices to reduce after-hours work among

teleworkers. By identifying multi-level contributing factors, interventions should adopt a comprehensive, multi-faceted approach rather than focusing on a single domain. Reducing after-hours work can enhance both the physical and mental well-being of workers, improve work performance, and ultimately foster a healthier, more productive workforce.

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Supplementary data

Supplementary data are available at the *Journal of Public Health* online.

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Data availability

Data will be made available upon request from the corresponding author.

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