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Examining the antecedents of working after hours among teleworkers: a scoping review protocol

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Abstract

There has been a significant rise in telework since the onset of the COVID-19 pandemic. Telework offers several benefits, such as greater flexibility and increased productivity. It also presents challenges such as increased after-hours work, which can negatively impact workers' physical and mental wellbeing. This scoping review aims to identify the antecedents of after-hours work among teleworkers. Online databases, including 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 will be searched to gather literature on factors affecting after-hours work among teleworkers. The inclusion criteria include study participants aged 18 or older, part of the working population, and individuals teleworking for at least six months. Additionally, the studies must be empirical, peer-reviewed, discuss the antecedents of after-hours work, and be published from 2010 to 2024. The findings from this study will guide organisations and healthcare professionals in developing strategies to reduce after-hours work among individuals who telework, thereby improving their overall health and wellbeing. The registration number for this scoping review on Open Science is (DOI 10.17605/OSF.IO/6A7M9).

1. INTRODUCTION

The performance and organisation of work are constantly evolving in the era of technological advancement (Kingma, 2019). Telework is an alternative working arrangement where workers engage in work-related tasks and activities outside of their primary workplace, mainly in their home environment (Gajendran, Harrison, & Delaney-Klinger, 2015). Telework also involves using communication technologies to interact with individuals within or outside their organisation (Gajendran et al., 2015). Various terminologies are used interchangeably with telework, including telecommuting, virtual work, work from home, remote work, asynchronous work, and e-work (T. D. Golden &

Eddleston, 2020). Telework started gaining momentum in the 1990s thanks to increased investments and improvements in information and communication technologies (Holland & Bardoel, 2016; Roy et al., 2024). Most notably, the COVID-19 pandemic marked a substantial increase in teleworking as several organisations could not work in person to adhere to public health guidelines (Belzunegui-Eraso & Erro-Garcés, 2020). Statistics Canada, for instance, found that the number of people working from home rose about 40% in April 2020, in contrast to the 7% of Canadians working from home in May 2016 (Statistics Canada, 2024). In fact, during the year 2020, teleworking made up over 50% of paid work hours, a rise from 5% before the pandemic (Barrero, Bloom, & Davis, 2021a). Though teleworking is not as prevalent as during the peak pandemic, many workers continue to telework even after health restrictions were lifted (Statistics Canada, 2024). As of November 2023, 20% of workers in Canada spent most of their work hours at home (Statistics Canada, 2024).

The benefits of teleworking led numerous companies to adopt this approach permanently, even after public health restrictions were lifted. Teleworkers mentioned higher productivity levels (Harrington & Emanuel, 2021), a balance between work and personal life (Rodríguez-Modroño & López-Igual, 2021), decreased stress levels (Business Wire, 2011), shorter commute times, reduced expenses (Anderson, Kaplan, & Vega, 2015), and greater control over work routines (Barrero, Bloom, & Davis, 2021b). This may be due to increased flexibility in choosing when to have meals and taking breaks according to one's schedule, all while reducing the risk of spreading and contracting COVID-19 (Ipsen, van Veldhoven, Kirchner, & Hansen, 2021). According to research, proximity to coworkers frequently results in lost time and decreased efficiency (Rau & Hyland, 2002). Workers are more productive when working remotely since there are fewer distractions within the office (Bellmann & Hübler, 2021). Despite these advantages, several studies have examined the challenges of teleworking. For instance, teleworking has made it difficult for workers to seek feedback, network, and benefit from mentorship opportunities (Carillo, Cachat-Rosset, Marsan, Saba, & Klarsfeld, 2021). Furthermore, compromised career advancement contributes to feelings of isolation (Filardi, Castro, & Zanini, 2020). Additionally, teleworkers can be distracted by their home tasks and responsibilities (Vinueza-Cabezas, Osejo-Taco, Unda-López, Paz, & Hidalgo-Andrade, 2022). A Portuguese study conducted by Tavares et al. (2021) found that 27.5% of workers working from home during the pandemic diverted their attention from work to focus on domestic chores and children (Tavares, Santos, Diogo, & Ratten, 2021). Though teleworking may aid in specifically reducing work stress, it can also create stress from workers trying to juggle the demands of both work and domestic issues (Andrade & Petiz Lousã, 2021).

A primary concern associated with teleworking is an increase in after-hours work. After-hour work, or working after-hours or overtime work (Arlinghaus et al., 2019), refers to workers engaging in work-related tasks beyond their contracted or salaried hours. A study by Peters et al. (2008), observed that teleworkers were likelier to engage in after-hours work than non-teleworkers (Peters, Wetzels, & Tijdens, 2008). The COVID-19 pandemic and the advancement of communication technologies have made it more typical for teleworkers to engage in after-hours work (Schlachter, McDowall, Cropley, & Inceoglu, 2018), which can have a negative effect on their psychological well-being at work (Yang, Yan, Li, Meng, & Xie, 2023). By way of example, workers frequently respond to work-related communicationss, handle work emails, and participate in virtual meetings after hours (Yang et al., 2023). In a Gallup research study, one-third of participants said they used email as their primary form of contact at work for work-related tasks outside of regular business hours. During the past ten years, this after-hours work interconnectivity has grown (Chen & Casterella, 2019). This is because after-hours work enables teleworkers to meet the raised expectations of employers related to their constant availability (McDowall & Kinman, 2017), and to deal with work-related guilt after partaking in excessive private smartphone use or engaging in other non-work-related responsibilities during working hours (Thompson, Carlson, Kacmar, & Vogel, 2020). Additionally, workers engaging in work-related tasks and activities in their home environment blurs the boundary between work and home making them more inclined to continue working after hours (Schieman & Young, 2010).

After-hours work gives workers greater control and autonomy when teleworking (Fujimoto, Ferdous, Sekiguchi, & Sugianto, 2016), as it allows workers to select an appropriate time to perform work-related tasks and responsibilities. However, when workers work from home, the physical boundary between the work and family realms is removed (Allen, Golden, & Shockley, 2015). This might result in higher levels of work interference with family (WIF) and family interference with work (FIW) due to more significant disturbances from work while an individual is in a family role when working from home (Jostell & Hemlin, 2018). Due to the stress of after-hours work, many workers minimise their social connections with family members (Repetti & Wood, 1997), which can contribute to family-work conflict (Petcu et al., 2023). This can further contribute to worker dissatisfaction (Gadeyne, Darouei, Verbruggen, Delanoeije, & Op de Beeck, 2023) and unethical conduct (Liu et al., 2024) as the lines between employment and personal life are blurred.

The demand for work performance during non-standard working hours strongly correlates with a considerable rise in stress levels (Magnavita, Tripepi, & Chiorri, 2021). Stress was often associated with working more than 10 hours a day (Maruyama & Morimoto, 1996), over 40 extra hours a month (Y. Sato, Miyake, & Theriault, 2009), and more than 60 hours of work a week (Lee, Suh, Kim, & Park, 2017). The protracted period of exposure to work-related demands that leaves one feeling both physically and intellectually exhausted is known as emotional exhaustion (Christina Maslach & Jackson, 1981). Research suggests that emotionally depleted workers cannot dedicate enough energy and resources to their jobs, which can lead to negative consequences such as work burnout, reduced motivation, and the inability to be productive (C Maslach & Leiter, 1997; Schaufeli & Bakker, 2004).

After-hours work has been linked to lower job satisfaction due to these high stress levels (Afonso, Fonseca, & Pires, 2017; Kim, Park, Lee, & Kim, 2016; Ogawa et al., 2018; Shields, 1999). Increased intensity at work and sickness presenteeism—where workers attempt to achieve goals despite being less capable of working and needing time off — are all considered manifestations of after-hours work (Baeriswyl, Krause, Elfering, & Berset, 2017; Deci, Dettmers, Krause, & Berset, 2016; Dettmers, Deci, Baeriswyl, Berset, & Krause, 2016). Presenteeism is linked to lower productivity (Mazmanian, Orlikowski, & Yates, 2013) and a higher chance of committing work-related mistakes (Gerich, 2019), further exacerbating stress. An estimated 35 per cent higher risk of stroke and 17 per cent higher chance of dying from ischemic heart disease are associated with prolonged stress from after-hours work (World Health Organization, 2021). This does not include the 398,000 deaths from heart disease and 347000 deaths from stroke that have already occurred in 2016 due to stress.

After-hours work also presents significant concerns regarding physical health among teleworkers (Magnavita et al., 2021). For example, working beyond regular hours has been associated with pain occurrence, the number of painful body areas, and specific conditions such as back, neck, and shoulder pain (Fiorini, 2023). Additionally, a correlation exists between after-hours work and headaches (K. Sato et al., 2012). One contributing factor is prolonged work hours, which can lead to muscle tension in the shoulders and cervical region, particularly among remote workers (Ortiz-Hernández, Tamez-González, Martínez-Alcántara, & Méndez-Ramírez, 2003). This may also explain the link between after-hours work and headaches, as headaches are often associated with neck stiffness (Mongini et al., 2009). Furthermore, extended work hours are linked to sleep deprivation (Artazcoz, Cortès, Borrell, Escribà-Agüir, & Cascant, 2007; van der Hulst, 2003) and an increased incidence of sleep disorders (Härmä, 2003) both of which are linked to headaches (Yokoyama et al., 2009; Zwart et al., 2003). Reduced sleep duration due to prolonged work hours prevents adequate recovery from fatigue, further exacerbating these health issues (K. Sato et al., 2012). This may impact physiological functions like hormone production, control of blood pressure, and nervous system activity, which can also lead to complaints about both physical and mental wellness (K. Sato et al., 2012). For instance, after-hours work is associated with a higher chance of having high systolic blood pressure (Iwasaki, Sasaki, Oka, & Hisanaga, 1998; Nakanishi,

2001). After-hours work and obesity have been shown to be correlated in a few studies (Nakamura et al., 1998; Shields, 1999). One possible mechanism for this could be that short sleep duration combined with poor sleep quality can cause a rise in hunger hormones, which can increase sensations of hunger and cause metabolic alterations that can result in obesity, insulin resistance, and lower lipid absorption (Spiegel, Tasali, Leproult, & Van Cauter, 2009). Extended work hours are also linked to elevated levels of depression and anxiety (Kleppa, Sanne, & Tell, 2008) due to these headaches (Boardman, Thomas, Millson, & Croft, 2005; Zwart et al., 2003). All these factors may contribute to poor lifestyle choices like drinking alcohol, smoking, eating poorly, and leading to a sedentary existence. The proportion of after-hour workers is rising and already makes up nine percent of the world's population, increasing mortality and disability rates in telework (World Health Organization, 2021).

Despite the existing literature underscoring the negative implications associated with after-hours work, there has been limited research into the antecedents that lead to after-hours work among teleworkers. Even with the return to normalcy after the pandemic, telework arrangements continue to be popular with various organisations. Given the prevalence of after-hours work among remote workers, it is essential to understand the contributing factors to develop effective strategies to address this issue. As such, this scoping review aims to identify potential antecedents for after-hours work among teleworkers. For this scoping review, "after-hours work" is defined as unpaid work conducted beyond the agreed working hours. This includes tasks performed outside of regular working hours without additional compensation, such as responding to emails, attending meetings, or completing job-related duties beyond the standard work schedule.

2. METHODOLOGY

2.1 Study design and registration

A scoping review will be conducted to synthesise existing research on the antecedents that contribute to after-hours work among teleworkers. To date, no knowledge syntheses have investigated the factors that lead to after-hours work as a primary objective in a telework context. The protocol references the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018). It will follow the recommendations provided by the Joanna Briggs Institute (JBI) (Moher, Liberati, Tetzlaff, & Altman, 2009). This protocol is registered on the Open Science Framework (DOI 10.17605/OSF.IO/6A7M9).

2.2 Search strategy

This scoping review will search seven electronic databases to find articles from 2010 to 2024 that examine factors associated with after-hours work among teleworkers. This period marks an increase in technological advancement, leading to a rise in telework. The databases including 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 will be searched for relevant articles during the period of September to October 2024. Author KB developed the search syntax for all databases with assistance from the University of Toronto Scarborough Librarian. The research team reviewed and approved the complete search strategy, which included terms associated with "factors" combined with terms related to "after-hours work" and "teleworking". The search strategy was tailored to each database due to differences in MeSH terms and boolean operators (Appendix A includes the complete search strategy for all databases).

2.3 Study eligibility criteria

Table 1 shows the inclusion and exclusion criteria defined for the review protocol.

Table 1. Inclusion and exclusion criteria

	Inclusion Criteria
1	Participants who are of working age (18-65)
2	Studies that include participants who telework, whether fully remote or in a hybrid work arrangement.
3	The main result of the study should be specified as " after-hours work" or similar terms (See Appendix A for a complete list of related terms)
4	Research papers should be empirical studies (e.g., quantitative or qualitative) and peer-reviewed
5	Studies must discuss the antecedents of after-hours work
6	Studies must be published from 2010 to 2024
	Exclusion Criteria
1	Studies classified as unpublished research, opinion pieces, book chapters, conference papers and abstracts, review articles, knowledge syntheses, commentaries, or grey literature
2	Independent contractors or self-employed individuals working after hours as the nature of their work

2.4 Data collection

Articles retrieved from the search will be exported to Covidence, a systematic platform for managing systematic reviews, which will detect and remove duplicate entries. Two reviewers from the research team (KB and B-ZSL) will independently screen the title and abstract of each article and will exclude those that do not meet the inclusion criteria. Eligible articles will proceed to full-text screening. Disagreements between the reviewers will be resolved through discussion, with a third reviewer (BNK) brought in if consensus is not reached. A PRISMA flow diagram will be automatically generated using Covidence to showcase the number of articles included and excluded at each screening process. The PRISMA flow diagram will also show the reason for exclusion at the full-text screening stage.

2.5 Data extraction

Two independent reviewers (KB and B-ZSL) will perform data extraction. Before the review process, a pilot test will be conducted to guarantee the inter-rater agreement. Microsoft Excel will be used to chart the data, and the following categories will be included in the template: (1) title of the study; (2) author name(s); (3) publication year; (4) country of origin; (5) study design; (6) participant demographics (e.g., age and sex); (7) study objectives; (8) workplace sector; (9) organizational norms and work culture; and (10) antecedents of after-hours work among teleworkers. The categories derived from the data extraction table will facilitate identifying possible themes for the scoping review. The data extraction table will be updated as needed because the data collection processes in scoping reviews are progressive. Study heterogeneity will be managed by systematically classifying studies based on key characteristics such as sector, geographic location, and study design. Subgroup analyses may be conducted to identify trends within specific contexts. Authors will be contacted for clarifications in the case of unclear or missing data. To ensure accuracy and reliability in data extraction, two independent reviewers will extract data, resolve discrepancies through discussion, and use a standardized data extraction form to maintain consistency.

2.6. Data synthesis

After the data extraction stage, the two reviewers will cross-check each other's results to ensure accurate reporting of study findings. Themes and sub-themes will be identified based on the literature and finalised after thorough discussion with the research team. All data will be recorded on a Microsoft Excel spreadsheet.

2.7. Critical appraisal

The two independent reviewers will critically appraise each of the included papers in-depth using the Agency for Healthcare Research and Quality (AHRQ) for cross-sectional studies and the Newcastle-Ottawa Scale (NOS) (Wells et al., 2021) for case-control and cohort research. Furthermore, the Critical Appraisal Skills Programme (CASP, 2024) tool will be employed for economic assessments, qualitative research, diagnostic investigations, and randomised controlled trials. Each independent reviewer will assess

the research article for bias risk and assign a low, moderate, or high rating. Disagreements among the reviewers will be resolved through discussion. If a resolution cannot be achieved, the issue will be raised to the senior author (BNK) and the research team. Each reviewer will maintain independent records of their critical evaluation, and consensus results will also be documented separately.

2.8. Dissemination

Following the guidelines provided in this protocol, the University of Toronto research team will carry out the scoping review as of the protocol's publication. Under the guidance of the senior author (BNK), the final manuscript will be created and submitted to a peer-reviewed journal.

3. DISCUSSION

This scoping review will contribute to the growing field of knowledge concerning after-hours work among teleworkers, a topic of increasing relevance in contemporary work environments. By systematically reviewing existing literature, the study will identify and analyse prevalent themes and factors influencing teleworkers' decisions to engage in after-hours work. Key antecedents such as organisational culture, job demands, technology use, and individual motivations will be critically examined to provide a comprehensive understanding of the phenomenon. Through this study, key researchers and other relevant stakeholders will better understand the implications of after-hours work on teleworkers' well-being, productivity, and work-life balance.

After-hours work, characterised as workers engaging in work-related activities beyond their expected hours, is a rising trend among teleworkers (Peters et al., 2008). The likelihood of workers engaging in after-hours work increases with telework as it blurs the boundary between the home and work environment (Schieman & Young, 2010). Long working hours are strongly linked to severe consequences for workers' overall health and well-being. Mental consequences identified among teleworkers include depression (Henke et al., 2016; Islam, Baun, & Racette, 2023), anxiety (Islam et al., 2023), burnout (Bezak et al., 2022), and poor sleep quality (Duong, 2021). Moreover, remote workers have musculoskeletal disorders (Gupta, Jadhav, Nataraj, & Maiya, 2023), body strain (Gosain, Ahmad, Rizvi, Sharma, & Saxena, 2022; Gupta et al., 2023), and illness and injuries (Pega et al., 2021) due to working for extended periods. With telework here, it is imperative to understand the factors associated with after-hours work to devise strategies that mitigate these risks. Several personal, work-related, and environmental factors strongly predict after-hours work in a telework context. Understanding these factors is crucial in designing and implementing effective interventions and policies that support the health and productivity of workers.

Chen & Karahanna (2018) pointed out that the flexible nature of telework enables workers to effectively prioritise work and non-work demands, allowing them to switch their focus between tasks as needed (Chen & Karahanna, 2018). Although this temporal flexibility reduces fatigue and enhances job performance (Chen & Karahanna, 2018), it also increases availability after-hours, as workers feel the need to be reachable outside of usual business hours (Kao, Ma, Rui-Hsin, & Cho, 2024; Major & Germano, 2006; Middleton & Cukier, 2006; Wang, Shu, & Tu, 2008). The availability of communication tools, such as emails and phones, has caused difficulties for teleworkers to disconnect from work (Boswell & Olson-Buchanan, 2007). It is now very common for business communications to interrupt our personal lives since mobile communication technology makes it easy to blur the conventional lines between work and home life (Chen & Casterella, 2019; Kreiner, Hollensbe, & Sheep, 2009). These tools, also referred to as technology-assisted supplementary work, have made it possible for workers to connect to work anywhere and anytime, facilitating constant availability (Fenner & Renn, 2004). Without proper boundaries, it is easy for "*anytime, anywhere*" connectivity to become "all the time, everywhere" connectivity, making it difficult to disconnect after-hours from the workplace (Jarvenpaa, Lang, & Tuunainen; Sørensen, Yoo, Lyytinen, & DeGross, 2005). This phenomenon, termed "telepressure," describes the urge among teleworkers to respond to work-related emails, phone calls, or virtual meetings

immediately due to the availability of communication technology (Barber & Santuzzi, 2015; Bavafa & Terwiesch, 2019; X. Hu, Santuzzi, & Barber, 2019; Santuzzi & Barber, 2018). Additionally, teleworkers may be willing to work beyond expected hours due to expectations set out by their employers. Research shows flexible work arrangements, like telework, are more commonly available for high-status occupations, which often involve a workplace culture expecting constant availability and overtime work (Glass, 2004; L. Golden, 2009; Kelly & Kalev, 2006). Moreover, the absence of clear workplace policies that clearly define expectations around working hours during remote work further reinforces these expectations (Tedone, 2022; Brumley et al., 2021).

Aside from work-related factors, several personal factors have been shown to predict after-hours work among teleworkers. Demographics such as age, gender, and family status impact the preference and suitability of after-hours work arrangements. For instance, younger teleworkers may embrace after-hours work for its flexibility, while older workers may value stability and face different challenges, such as caregiving responsibilities (Koreshi & Alpass, 2023). Moreover, a study by Bowen et al. (2017) discovered that gender had a significant impact on the prediction of both job pressure ($\beta=0.12$, $p<0.01$) and work contact ($\beta=-0.11$, $p<0.01$), with women reporting more job pressure and lower work engagement than men (Bowen, Govender, Edwards, & Cattell, 2017). After-hours work interaction will likely rise with higher workplace pressure levels (Bowen, Govender, Edwards, & Cattell, 2018).

Additionally, a study by Fan & Moen (2021) reported that women telework are more at risk of change in work hours than men (Fan & Moen, 2022). The study found that gender intersects with family status regarding changes in work hours. Women caring for older children are more likely to report long work hours, while women with pre-school children are likely to decrease their work hours (Fan & Moen, 2022). Besides demographic characteristics, personality traits are another personal factor that can impact the likelihood of teleworkers engaging in after-hours work behaviours. For instance, after-hours use of communication devices is widespread among ambitious workers who are deeply invested in their work. For these teleworkers, participating in after-hours work can be a way to demonstrate competence, professionalism, and dedication to career advancement (Schlachter et al., 2018).

Despite the several strengths presented in this review's methodology, some persisting limitations must be acknowledged. With the review being restricted to studies published in English due to language barriers, it may introduce a Western bias that fails to capture the intricate nuances of the varying cultures, practices, and health outcomes relevant to non-Western populations. As a result, the overall generalizability of the study may be compromised. Heterogeneity among the chosen studies due to differences in settings, populations, and outcome measurement can make it difficult to draw major conclusions. Moreover, with quality assessment not being performed for the chosen studies, the reliability of the findings will remain unclear. Aside from these limitations, there is still a dire need to examine factors associated with prolonged telework hours. With telework becoming a permanent fixture and the increasing incidence of after-hours work, understanding factors associated with extended periods of telework is crucial for promoting workers' health and overall well-being.

4. CONCLUSION

This scoping review sheds light on the growing phenomenon of after-hours work among teleworkers, highlighting its critical implications for workers' wellbeing, productivity, and work-life balance. By systematically analysing key factors such as organisational culture, job demands, technology use, and individual motivations, the review underscores the multifaceted nature of after-hours work and its associated risks, including mental health challenges, physical strain, and diminished work-life boundaries. The findings emphasise the importance of implementing effective interventions, policies, and cultural shifts to mitigate the adverse effects of extended work hours in telework settings. While the review provides valuable insights into this increasingly relevant topic, the identified limitations call for further exploration to enhance understanding and applicability across diverse contexts.

5. FUTURE STUDIES

Future research should address the identified gaps by expanding investigations beyond Western-centric perspectives to include non-Western populations, ensuring a more comprehensive understanding of cultural and regional nuances. Additionally, longitudinal studies are needed to assess the long-term health, productivity, and work-life balance impacts of after-hours work in telework settings. Researchers should explore interventions that can help teleworkers establish and maintain boundaries between work and personal life, particularly focusing on mitigating the effects of telepressure and technology-assisted supplementary work. Moreover, examining intersectional factors such as gender, family status, and personality traits can provide deeper insights into how these variables interact to influence after-hours work behaviours. Finally, quality assessments of future studies will be essential to ensure the reliability and generalizability of findings, enabling the design of targeted strategies to promote healthier telework practices.

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