

# The mental health impact of work from home: A literature review

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## ABSTRACT

*The 2020 coronavirus (COVID-19) pandemic has shifted the workplace focus from on-site to remote locations and has introduced discussions about the positive and negative features of working from home (WFH). Many employees have reported increased control and flexibility regarding one's schedule with the shift to a remote model. However, there have been increasing concerns regarding the emotional and mental health effects of such a model and the social isolation resulting from staying at home. The lack of professional boundaries, technological limitations, and forced interaction with family members have been considered potentials costs of the convenience of WFH. In this review paper, we discuss the possible benefits and consequences of remote work on various measures of mental health and discuss the implications of future WFH models which may provide workers with greater autonomy and flexibility.*

**Keywords:** work from home, mental health, job satisfaction, depression

## INTRODUCTION

The concept of working from home (WFH) has become an important topic during the ongoing COVID-19 pandemic. According to one study in the United States, it was estimated that the proportion of work completed from home increased from 16% before the pandemic to 84% post-pandemic.<sup>1</sup> For many people, the workplace became a spare bedroom or the kitchen table, posing the question: how will this affect employee mental health? Moreover, studies on the relationship between the workplace environment and employee quality of life have established the importance of reducing work stressors and maximizing employee mental health and well-being.<sup>2,3</sup> In this review paper, we discuss the possible benefits and consequences of remote work on various measures of mental health, associated protective and harmful factors, and possible future implication of these results. Review of the

most current literature indicates WFH status is significantly associated with both positive and negative mental health and lifestyle factors. Additionally, studies identified a number of characteristics with possible protective and harmful effects on mental health and lifestyle, such as the level of domestic responsibilities held and the amount of social support available.<sup>4</sup> These findings are similar to work by Liu et al., who suggested that one's mental health is affected by the perceived advantages and disadvantages of remote work.<sup>5</sup> This concept highlights the importance of reviewing the current data on the impact of WFH on mental health to better understand the utility of remote work and how to maximize mental health while adapting to a new work environment moving forward.

## METHODS

An online literature search was conducted from November 21 to December 4, 2021, using the following databases: PubMed, EBSCO Host, and Scopus. The keywords "Mental Health" AND ("Work from Home" OR "Remote Work") were used in preliminary searches that were then further refined for unique, full-text accessible,

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**DOI:** 10.12746/swrccc.v10i45.1085

peer-reviewed articles published in the English language between January 2010 and November 2021. Book chapters and editorials were excluded before deciding eligibility of each article. The remaining articles were individually reviewed for relevant information on the impact of remote work on mental health and associated lifestyle factors.

## RESULTS

A total of 3627 articles were retrieved from the three databases which were narrowed down to 477 full-text articles that met initial search criteria. Of those, 16 articles were found to be relevant to the topic of interest and used in the literature review. A summary of the screening process and results is depicted in the PRISMA diagram (Figure 1).<sup>6</sup> The majority of the articles (15 out of 16) were written either completely or partially in the context of the 2020 COVID-19 pandemic. Most of the articles explored various lifestyle factors, such as alcohol use, sleep quality, etc., associated with WFH along with the mental health effects; this information provides more depth and increases the factors potentially relevant to WFH. One study focused exclusively on military-aged men, and one study focused exclusively on women of child-bearing age. Two studies explored the effects of online schooling on university students; these studies were not excluded from the review because online schooling seems comparable to remote working. A list of the key points from each study is summarized in Table 1 and Table 2, excluding literature reviews ( $n = 3$ ), in the supplemental digital content (SDC). The following sections will review the main results in the studies on WFH.

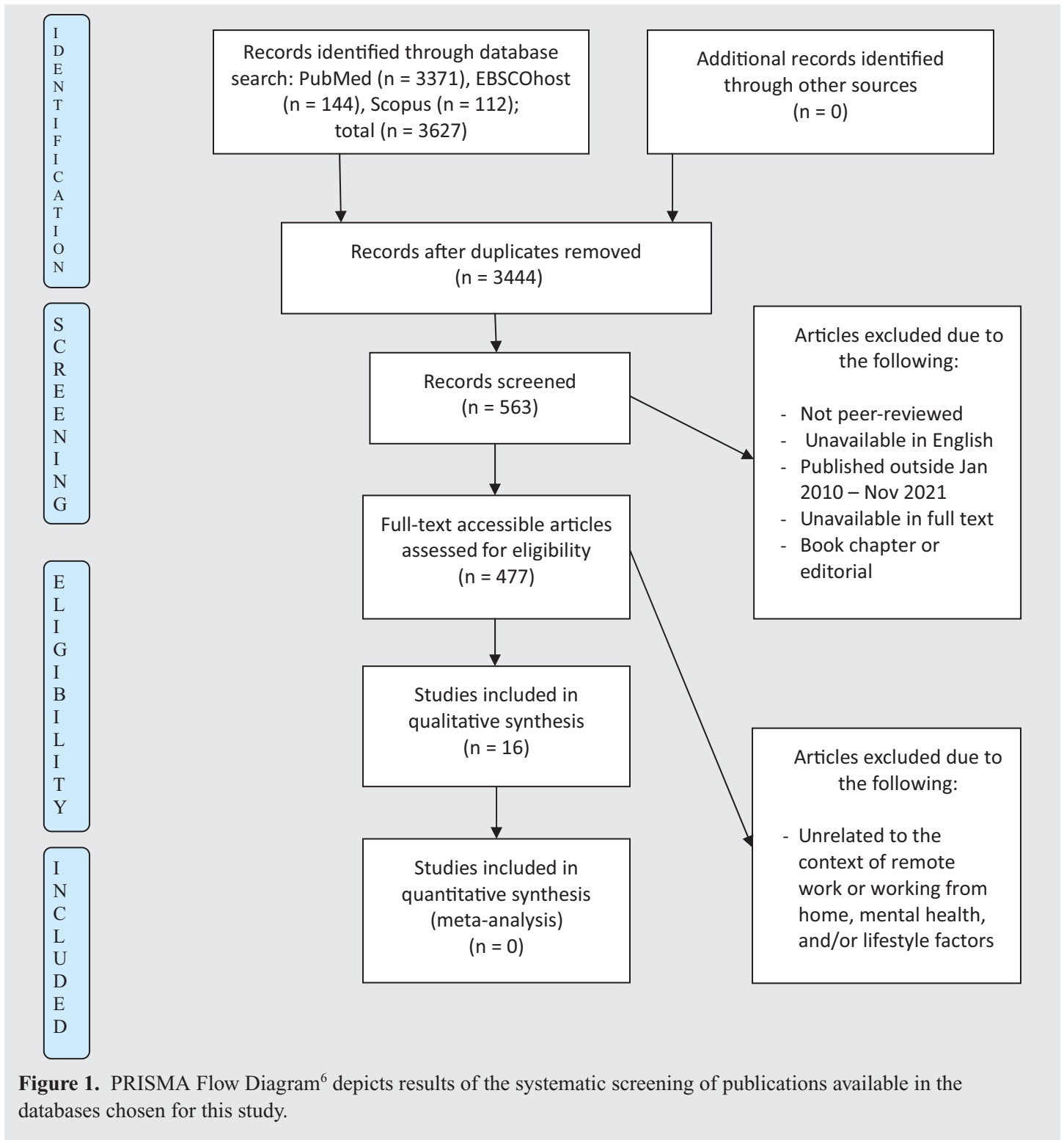
### POSITIVE MENTAL HEALTH AND LIFESTYLE ASSOCIATIONS OF WFH

Review of the literature revealed several positive parameters of mental health and lifestyle associated with WFH. One of the most cited benefits of WFH was reduced commute time.<sup>5,7,8</sup> Greater flexibility<sup>5,8</sup> and freedom to personalize one's schedule<sup>7</sup> were also popular aspects of remote work enjoyed by employees. Working from home was also associated

with increased opportunities for family, leisure, and self-care.<sup>7,8</sup> Social network strength was also significantly associated with WFH.<sup>9</sup> In a 2016 study, it was reported that women who had the opportunity to WFH after recent childbirth had a significant decrease in measured depression ( $p = 0.002$ ).<sup>10</sup> Similarly, WFH was associated higher levels of energy along with lower levels of stress in caregivers.<sup>4</sup> One Japanese study reported that, compared to office workers, employees who switched to telework experienced less stress due to economic pressure (3.6% vs 9.3%) and lack of communication with cohabitants (1.4% vs 3.5%).<sup>11</sup> Remote work was also associated with the reduced risk of viral spread.<sup>5</sup> Other measures of mental health such as boredom, frustration, and anger were reported to be lower in remote employees, while levels of happiness and gratefulness were found to be higher.<sup>4</sup> A Canadian cross-sectional revealed that remote workers experienced lower levels of anxiety and depression than site-based workers and those who lost their jobs ( $p < 0.05$ ).<sup>12</sup> Similarly, WFH was demonstrated to protect against depression, anxiety, and post-traumatic symptoms ( $p < 0.005$ ).<sup>13</sup> In addition, 13.5% and 37.2% employees who switched to telework were "very satisfied" and "satisfied" with telework, respectively, compared to 2.6% and 13% who were "very dissatisfied" and "dissatisfied," respectively.<sup>11</sup> Another small cross-sectional study comprised of mental health clinicians stated that all participants wanted the opportunity to continue to WFH in some capacity, and over half of the clinicians reported being "very satisfied" with WFH.<sup>8</sup>

### NEGATIVE MENTAL HEALTH AND LIFESTYLE ASSOCIATIONS OF WFH

Despite the many positive associations of remote working, review of data provides important evidence on the potential harms of WFH as well. For example, studies often cited the challenge of balancing work and home life and setting professional boundaries.<sup>5,7,11</sup> Similarly, telework was associated with a higher prevalence of distress secondary to work-family conflict ( $p < 0.001$ ), and 32.6% of employees who switched to WFH reported no access to a workroom.<sup>11</sup> For some, WFH led to decreased work productivity.<sup>7</sup> WFH also



**Table 1. Summary of Cross-sectional Articles**

Study n = 10	Subjects	Method	Results
Alam <sup>18</sup>	Bangladeshi online university students n = 509	Questionnaire	<ul style="list-style-type: none"> <li>• 4.32% of students had mild, 72.7% had moderate, 12.57% had moderately severe, and 10.41% had severe mental health imbalances</li> <li>• Having family members affected by the coronavirus, facing insecurity, using social media, and smoking was associated with higher levels of mental health imbalances</li> <li>• Worrying about studying or future careers, spending more time with family members, and participating in household chores was associated with lower mental health disturbances</li> </ul>
Izdebski <sup>17</sup>	Polish remote workers n = 387	Questionnaire	<ul style="list-style-type: none"> <li>• Remote workers reported worsening symptoms of loneliness, feeling low/depressed, well-being, frustration, and tantrums/aggression compared to traditional workers</li> </ul>
Jaspal <sup>9</sup>	United Kingdom remote workers n = 205	Questionnaire	<ul style="list-style-type: none"> <li>• Social network strength was associated with WFH</li> <li>• Income and age were associated with working from home, suggesting low income and older age groups were less likely to WFH</li> </ul>
Mondal <sup>15</sup>	Indian remote workers n = 106	Questionnaire	<ul style="list-style-type: none"> <li>• Remote workers reported higher levels of anxiety due to COVID-19, depression, and insomnia compared to traditional office workers</li> <li>• WFH for more or less hours than baseline was associated with increased depression</li> <li>• 18.8%–24.3% of WFH employees met clinical insomnia criteria</li> </ul>
Niu <sup>11</sup>	Japanese teleworkers n = 1810	Questionnaire	<ul style="list-style-type: none"> <li>• Most common WFH stressors: can't go out for entertainment and lack of communication with colleagues</li> <li>• Switching to telework was associated with decreased stress due to economic pressure and lack of communication with cohabitants</li> <li>• Switching to telework was associated with higher prevalence of alcohol consumption and increases in physical symptoms like eye strain and back pain</li> <li>• 32.6% of employees who switched to WFH reported no access to a workroom and 67.3% decreased their exercise</li> <li>• 13.5% and 37.2% of employees who switched to telework were “very satisfied” and “satisfied” with telework, respectively vs 2.6% and 13% who were “very dissatisfied” and “dissatisfied”, respectively</li> </ul>
Smit <sup>16</sup>	Canadian online university students n = 80	Questionnaire	<ul style="list-style-type: none"> <li>• Identifying as “evening type” was associated with a positive impact on sleep, and identifying as “morning type” was associated with negative effects on sleep</li> <li>• Social distance learners slept less efficiently, with later sleep onsets and decreased nocturnal sleep, compared to students from past semesters</li> </ul>

(continued)

**Table 1. Summary of Cross-sectional Articles (Continued)**

Study n = 10	Subjects	Method	Results
Smith <sup>12</sup>	Canadian remote workers n = 1376	Questionnaire	<ul style="list-style-type: none"> <li>Remote workers had lower levels of depression and anxiety compared to all site-based workers and those who lost their jobs (<math>p &lt; 0.05</math>)</li> <li>Availability of personal protective equipment (PPE) had a significant protective effect against depression and anxiety</li> </ul>
Steidtmann <sup>8</sup>	United States mental health clinicians and staff WFH n = 25	Questionnaire	<ul style="list-style-type: none"> <li>Advantages of WFH: lack of commute, time with loved ones, opportunities for self-care, and increased flexibility</li> <li>Disadvantages of WFH: difficulty providing clinical forms and with technology</li> <li>All participants wanted to continue to WFH to some extent</li> <li>52.0% and 28.0% were “very satisfied” and “satisfied” with WFH, respectively</li> <li>38.5% of staff reported doing worse in terms of burnout and/or compassion fatigue since the pandemic and WFH</li> </ul>
Traunmüller <sup>13</sup>	Austrian remote workers n = 1438	Questionnaire	<ul style="list-style-type: none"> <li>WFH was a protective factor against depression, anxiety, and post-traumatic symptoms</li> </ul>
Wardell <sup>14</sup>	Canadian remote workers n = 151	Questionnaire	<ul style="list-style-type: none"> <li>WFH was not significantly associated with drinking as a coping mechanism</li> </ul>

removed the necessity of traveling to work, decreasing opportunities for recreational activity<sup>11</sup> and leaving employees feeling socially isolated.<sup>4,7</sup> Inconveniences related to limited access to technology were also common experiences shared among remote workers.<sup>5,8,11</sup> Furthermore, WFH employees experienced significantly

worsening physical health such as increased sedentary behavior,<sup>1,11</sup> eye strain, and back pain symptoms ( $p < 0.01$ ).<sup>11</sup> Remote work was also associated with a higher prevalence of alcohol consumption than office workers ( $p < 0.01$ ).<sup>11</sup> Wardwell et al.,<sup>14</sup> however, found no relationship between WFH and alcohol consumption.

**Table 2. Summary of Longitudinal Articles**

Study n = 3	Subjects	Method	Results
Barone Gibbs <sup>1</sup>	United States remote workers n = 93	Questionnaire	<ul style="list-style-type: none"> <li>Working from home increased from 16% to 84% during COVID-19</li> <li>Remote participants reported greater increases in stress</li> <li>Remote participants reported greater increases in non-workday sedentary behavior</li> </ul>
Marmet <sup>19</sup>	Swiss men of military age WFH n = 1342	Questionnaire	<ul style="list-style-type: none"> <li>WFH 90%–100% of the time was associated with higher levels of depression, perceived stress, fear, and isolation compared to WFH 0% (CI 95%)</li> <li>No significant differences in mental health parameters were found between WFH 1%–89% and 0%</li> </ul>
Shepherd-Banigan <sup>10</sup>	United States women WFH six months after childbirth n = 132	Questionnaire and interview	<ul style="list-style-type: none"> <li>WFH status was associated with decreased depression over time</li> </ul>

Evidence on the effects of sleep quality and remote work also revealed remote workers experienced higher levels of insomnia compared to traditional workers, with 18.8%–24.3% of WFH employees meeting clinical insomnia criteria.<sup>15</sup> Social distance learners were also found to sleep less efficiently with later sleep onsets and decreased nocturnal sleep times compared to traditional students in previous semesters.<sup>16</sup>

In addition, the literature suggested WFH employees experienced various mental health morbidities such as anxiety, depression, and emotional exhaustion.<sup>5</sup> In online university students, cluster analysis of reported mood symptoms (e.g., anxiety and depression) and perceived stress revealed over 70% of participants during the pandemic had moderate levels of mental health imbalances.<sup>18</sup> A Polish study concluded that compared to traditional workers remote workers reported increased loneliness (36.6% vs 21.9%), depression and well-being (38.9% vs 26.8%), and tantrums/aggression (27.3% vs 19.6%) ( $p < 0.02$ ).<sup>17</sup> Likewise, remote work was associated with a greater increase in stress ( $p < 0.05$ )<sup>1</sup> and higher levels of depression and anxiety than in-person workers.<sup>15</sup> In the United States, 38.5% of mental health staff reported increased levels of burnout and/or compassion fatigue after switching to remote work during the pandemic.<sup>8</sup>

#### **PROTECTIVE FACTORS OF MENTAL HEALTH AND LIFESTYLE IN WFH**

In addition to measuring the relationship between WFH and mental health, the available literature identified protective factors associated with mental health and lifestyle habits in WFH employees. Communication with colleagues was shown to be associated with greater psychological well-being in addition to protect against social isolation.<sup>4</sup> Social connectedness was also positively associated with measures of psychological health, such as gratefulness, enthusiasm, and happiness.<sup>4</sup> Certain personal attributes, such as increased openness to experience and lower rumination, were positive modulators of well-being.<sup>4</sup> For students, significant protective factors of mental health included time with family, participation in chores, and greater emphasis on studying.<sup>18</sup> In addition, students who identified

as “evening types” reported more subjective positive effects on sleep compared to self-identifying “morning types.”<sup>16</sup> One Canadian study during the COVID-19 pandemic revealed that the availability of personal protective equipment (PPE) was inversely associated with depression and anxiety.<sup>12</sup> Work schedule also found to be significantly associated with mental health in remote workers; one study reported that spending more hours WFH was associated with decreased emotional exhaustion and mental strain.<sup>4</sup> On the other hand, working for up to eight hours at home per month was found to be protective against depressive symptoms, but working for more than eight hours did not reveal a significant association with depression.<sup>4</sup>

#### **HARMFUL FACTORS OF MENTAL HEALTH AND LIFESTYLE IN WFH**

Potential modulators of undesired mental health outcomes in WFH employees were also discussed in these references. According to one source, the widespread closure of schools and childcare centers during the pandemic increased the difficulty of maintaining work-life boundaries for employees responsible for young children at home.<sup>7</sup> Work-family conflict was also shown to be a direct modulator of exhaustion in remote workers.<sup>4</sup> Another study suggested inadequate employer support was associated with psychological strain in remote workers.<sup>4</sup> Interestingly, certain identifiers such as employment in education or employees with autism were associated with negative opinions of WFH, possibly as a result of difficulty adjusting to the new workplace constraints.<sup>5</sup> In addition, WFH employees in developing countries experienced disproportionately greater amount of negative outcomes due to COVID-19 restrictions compared to developed countries.<sup>5</sup> One Bangladeshi study identified a number of potential harmful modulators of mental health in remote learners, such as smoking, using social media, financial hardships, and having family members impacted by COVID-19.<sup>18</sup> Identifying as a “morning type” in students was associated with negative effects on sleep.<sup>16</sup> Notably, significant associations between mental health outcomes and work schedules were identified. Fewer days spent WFH was associated with greater work strain related to

work overload and role ambiguity.<sup>4</sup> In contrast, WFH 1%–89% of the time revealed no significant impact on mental health parameters compared to traditional workers, but WFH 90%–100% of the time was associated with higher levels of depression, fear, and perceived stress (CI 95%).<sup>19</sup> A separate study suggested that WFH for either less or more hours than one's baseline was positively associated with depression.<sup>15</sup>

## DISCUSSION

### RECOMMENDATIONS

It has been well-established that the workplace environment can have significant effects on mental health of employees.<sup>5</sup> This review of current literature on remote work supports this consensus, with evidence suggesting that WFH status is associated with depression,<sup>5,10,12,13,17</sup> anxiety,<sup>5,12,13,15</sup> stress,<sup>1,5,12</sup> sleep quality,<sup>15,16</sup> and more. Further, the effects of WFH on mental health and lifestyle appear to be modulated by a variety of protective and harmful factors, such as level of social support,<sup>4,9</sup> work-family conflicts,<sup>5</sup> work schedules,<sup>4,15,16</sup> and pandemic related factors (e.g., closure of childcare facilities,<sup>7</sup> availability of PPE<sup>13</sup>). This strongly suggests that the advantages and disadvantages of WFH widely depends on individual preference and characteristics. While further research is recommended to establish the specific subpopulations most conducive to remote work,<sup>19</sup> it may be beneficial for employers to offer flexible work schedules, or “hybrid” options, allowing employees the freedom to work in the setting that best suits their needs.<sup>20</sup> Providing employees the option to WFH can foster a greater sense of autonomy and lower stress levels, thereby promoting a positive perspective of one's employment and increased happiness in one's personal life.<sup>21</sup> When comparing the effects of working in either a hybrid model or a traditional cubicle office space, one Austrian study found those working within a hybrid model noted higher positive values, such as support, care, and forgiveness compared to participants working exclusively on-site.<sup>22</sup> The study suggested a balanced work environment can exert a protective effect on one's mental health.<sup>22</sup> Implementing more flexible work schedules through

a hybrid model may also encourage older employees to extend their retirement dates and expand employment options for people with physical impairments.<sup>23</sup> It may also facilitate career advancements of women who, whether due to cultural expectations or personal desires, want to maintain both home and work roles through hybrid schedules.<sup>23</sup> Moreover, because the literature has demonstrated that the effects of WFH includes both protective and harmful factors, it is recommended workplaces do not neglect implementing workplace safeguards to address the adjustable harms associated with virtual work environments. Data suggest some of the more pertinent protective measures should include a strong technology support infrastructure<sup>3,20</sup> and policies to protect employees from working excessive hours to maintain clear work-life boundaries.<sup>23</sup> In addition, it is recommended that hybrid work models encourage opportunities for socialization and collaboration by using digital conference platforms and simulating virtual breaks between meetings to limit fatigue and burnout.<sup>20</sup> Overall, the literature from this review as well as supporting bodies of work identify significant features of WFH that could be implemented to the advantage of workers' mental health and quality of life. Therefore, the utility of flexible remote work schedules should be considered moving forward.

### LIMITATIONS

This review has a number of limitations. The majority of studies reviewed were conducted in the context of the 2020 COVID-19 pandemic, and it is therefore important to consider how the stressors of the pandemic and the often involuntary requirement of WFH influenced the mental health associations of remote work. In addition, most of the workforce that transitioned to remote work during the pandemic were employed in areas that are generally considered office jobs, which invariably excluded most workers in industries, such as food service, construction, and emergency services.<sup>5</sup> Other potential confounding factors of remote work include a possible income disparity between occupations held by WFH employees and in-person employees, with WFH employees earning more on average.<sup>7,9</sup> Similarly, it is important to

consider that vulnerable worker populations (e.g., the elderly, physically impaired, or ethnic minority groups) are underrepresented in the WFH workforce due to pressures to work in-person.<sup>9</sup> This concern is further supported by data that suggest older individuals and individuals who make less money are less likely to WFH.<sup>9</sup>

## CONCLUSIONS

The workplace experienced a dramatic shift during the 2020 COVID-19 pandemic, forcing many workers to adapt to a “work from home” lifestyle, and it has been predicted that this change will continue.<sup>23</sup> The most recent literature indicates a significant relationship exists between remote work and employee mental health and lifestyle. However, it appears that the benefits and consequences of WHF are quite variable, suggesting the presence of external factors, including possible confounding factors of the pandemic. Review of the data suggests the costs and benefits of WFH are also associated and potentially modulated by these external factors, such as social support,<sup>4,9</sup> work-family conflicts,<sup>5</sup> work schedules.<sup>4,15,19</sup> Such reasoning would conclude that remote working is not suited to all individuals, and the positive and negative impacts of WFH is largely dictated by unique traits as personal characteristics and preferences. Nevertheless, supporting literature suggests hybrid WFH models have the potential to positively impact mental health<sup>21,22</sup> as well as provide societal benefits.<sup>23</sup> Therefore, it is recommended to consider utilizing flexible work schedules that allow employees to work in their preferred environment. However, more study is needed before formulating recommendations and guidelines on hybrid work schedules. Likewise, future research on the mental health impacts of WFH should be continued outside the context of the 2020 COVID-19 pandemic, with emphasis on establishing the relationships between mental health and potential key modulators such as domestic stressors, caregiver status, socioeconomic status, and occupation. Since many employers will likely continue to use long-term remote and hybrid work schedules, it is important to undertake additional research to develop evidence-based recommendations that minimize mental

health consequences and maximize efficiency and well-being.

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**Article citation:** Sarangi A, Kim D, Rafael J. The mental health impact of work from home: A literature review. *The Southwest Respiratory and Critical Care Chronicles* 2022;10(45):10–18

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**Submitted:** 9/13/2022

**Accepted:** 10/3/2022

**Conflicts of interest:** none

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