

## Long-Hours – Evidence Review

### Resources

[NHS Employers Section 27: Working Time Regulations](#)

[The Royal College of Nursing's advice on working time and breaks](#)

### Research Review

Shields (Shields, 1999) found that women who worked long hours had increased odds of subsequently experiencing depression. Moving from standard to longer hours was associated with unhealthy weight gain for men, with an increase in smoking for both sexes and with an increase in drinking for women.

Nakanishi (Nakanishi, Yoshida, et al., 2001) found that long working hours were *negatively* associated with the risk of high blood pressure in Japanese male white-collar workers.

Nakanishi (Nakanishi, Nishina, et al., 2001) also found that longer overtime was a *negative* risk factor for the development of impaired fasting glucose and/or type-2 diabetes in Japanese male office workers.

Kirkcaldy (Kirkcaldy, Trimpop, & Levine, 2002) found no evidence that medical doctors working longer weekly hours were more likely to be involved in a driving or work-related accident.

Liu (Liu & Tanaka, 2002) found that weekly working hours were related to progressively increased odds of acute myocardial infarction in the past year with a twofold increase when people worked more than 61 hours a week.

Rogers (Rogers, Wei-Ting, Scott, Aiken, & Dinges, 2004) found that the risks of nurses making an error were significantly increased when work shifts were longer than 12 hours, when nurses worked overtime or when they worked more than 40 hours a week.

Wilkins (Wilkins, 2005) found that there was no relationship between working time and workplace safety performance. However, increased working time of part-time employees *was* associated with a greater rate of workplace injuries.

Dembe (Dembe, Erickson, Delbos, & Banks, 2005) found that working at least 12 hours a day was associated with a 37% increased hazard rate and working at least 60 hours a week was associated with a 23% increased hazard rate.

Tucker (Tucker & Rutherford, 2005) surveyed 372 train drivers. He found that those who lacked autonomy over their schedules and social support showed a positive association between the number of hours worked and the frequency of their physical health symptoms. However, those who had low autonomy but higher social support showed a *negative* association between hours worked and physical health symptoms.

Ala-Mursala (Ala-Mursala et al., 2006) found that long domestic and total working hours were associated with higher rates of medically-certified sickness absences among both sexes. However, long paid working hours were associated with lower rates of subsequent self-certified sickness absence. Long commuting hours were related to increased rates of sickness absence.

Low control over daily working hours predicted medically-certified sickness absences for both the women and men and self-certified absences for the men. High control over working hours reduced the adverse associations of long domestic and total working hours with medically-certified absences.

Nagashima (Nagashima et al., 2007) studied 715 workers in Japan. He found that those working more than 260 hours a month had a higher risk of depression, irritability, anxiety and chronic tiredness. Those working more than 280 hours were at increased risk for general fatigue, physical disorders, anxiety and chronic tiredness. Nagashima recommended that working hours should be less than 260 a month in order to minimise fatigue symptoms.

Artazcoz (L. Artazcoz, Cortès, Escribà-Aguir, Cascant, & Villegas, 2009) studied 2,792 people in Catalonia. Men with a high job status were more likely to work more than 40 hours a week but for women long workhours were associated with situations of vulnerability such as low job status or being separated or divorced. For both sexes working more than 40 hours a week was linked to a shortage of sleep. Among the women long work hours were associated with poor mental health, job dissatisfaction and smoking. Among women who worked more hours at home long work hours were related to sedentary leisure time activity.

Zadeh (Zadeh & Ahmad, 2008) found a significant difference in psychological stress between men who worked more than 40 hours a week and those who worked fewer hours.

Virtanen (Marianna Virtanen et al., 2009) found that long working hours (more than 55 a week) was associated with lower scores in a vocabulary test and decline in performance on a reasoning test.

Artazcoz (L. Artazcoz et al., 2009) found that, among men, working 51-60 hours a week was consistently associated with poor mental health, high blood pressure, job dissatisfaction, smoking, shortage of sleep and lack of exercise. For women excessive hours were related to smoking and shortage of sleep.

Dembe (Dembe, Delbos, & Erickson, 2009) found that the greatest injury risks to healthcare workers were in schedules involving overtime or at least 60 hours a week.

Escoto (Escoto et al., 2010) found that working 50 or more hours a week was associated with a higher BMI among men but not women.

Holtermann (Holtermann et al., 2010) found that working more than 45 hours a week was associated with an increased risk (2.28x) of death from heart disease among the least fit workers.

In a study of 1,822 doctors Rosta (Rosta & Aasland, 2011) found that not exceeding a nine-hour work day and 60-hours on call a month were both significant predictors of good self-reported health

Magee (Magee, Caputi, & Iverson, 2011) studied 16,951 people and found that short sleep partially mediated the association between long work hours and increased BMI in men. In women long work hours were indirectly related to higher BMI through short sleep. "The results provide some support for the hypothesis that long work hours could contribute to obesity via a reduction in sleep duration.

Wagstaff (Wagstaff & Lie, 2011) carried out a systematic review of long hours and safety concluding that “both shift work and long working hours present a substantial and well-documented detrimental effect on safety.” However, Wagstaff also concluded that the differences were small in epidemiological terms and “only of importance if the accident incidence is high or if accidents may have large effects.”

In a study of 2,960 civil servants Virtanen (M. Virtanen et al., 2011) found that working more than 55 hours a week led to increases in depression and anxiety among women but not men.

Kobayashi (Kobayashi, Suzuki, Takao, & Doi, 2012) studied 1,601 Japanese men and found that there was a positive association between working hours and metabolic syndrome after adjusting for age, occupation, shift work, smoking, frequency of alcohol consumption, and cohabiting status.

Virtanen (Marianna Virtanen, Stansfeld, Fuhrer, Ferrie, & Kivimäki, 2012) found that people who worked more than 11 hours a day were 243% more likely to have a major depressive episode than those who worked 7-8 hours.

Nakata (Nakata, 2012) studied 2,579 people and found that compared with those who worked six-to-eight hours a day people who worked eight-to-ten hours a day or more than ten had a 36% and 87% greater chance of self-reported ill health. Combinations of the longest work hours with the shortest or insufficient sleep “exerted synergistic negative associations on self-reported health.”

Wirtz (Wirtz, Lombardi, Willetts, Folkard, & Christiani, 2012) found that injury risk increased among women working 41-50 hours a week or more but not among men.

A review in *Evidence-Based Mental Health* found that long working hours were associated with incident depressive and anxiety symptoms in women (“Long working hours are associated with incident depressive and anxiety symptoms in women,” 2012).

Nakamura (Nakamura et al., 2012) studied the links between overtime and blood pressure in 1,235 Japanese factory workers. Extensive overtime work was associated with increased blood pressure in assembly-line workers but not in clerks, engineers or technicians.

Varma (Varma et al., 2012) studied 2,790 Danish medical consultants and found that long work hours did not increase depression. “If anything, long work hours vaguely appear to decrease the risk of redeeming anti-depressant drug prescriptions.”

In 2012 *Hospital Employee Health* reported that nurses who work long hours were more likely to be obese (“Long hours linked to nurse obesity,” 2012)

Au (Au, Hauck, & Hollingsworth, 2013) found that among employed women working regular, long (41-48 hours) or very long (49+) hours was associated with increasingly higher levels of weight gain compared with working part-time hours.

A systematic review by Solovieva (Solovieva, Lallukka, Virtanen, & Viikari-Juntura, 2013) found associations between long work hours, working overtime, and weight gain, especially among men.

Artazcoz (L. P. Artazcoz et al., 2013) found that the association between long working hours and health was stronger in men in countries with male bread-winner models, primarily in

Anglo-Saxon countries where working a 51-60 hour week was associated with a 643% higher rate of work-related poor health status, a 604% higher rate of stress and 1 960% higher chance of psychological distress. The effect was equal for men and women in Scandinavian countries and greater for women in Eastern European countries.

Kim (I. M. D. P. Kim et al., 2013) found that compared to people working fewer than 52 hours a week those working 52-59 hours had a 19% greater chance of depression whilst those working 60 hours or more had a 62% greater chance.

Bannai (A. M. D. Bannai & Tamakoshi, 2014) carried out a systematic review of 19 studies and concluded that working long hours was associated with depressive state, anxiety, sleep condition, and coronary heart disease.

Rodriguez-Jareno (Rodriguez-Jareno et al., 2014) reviewed the evidence about the health consequences for doctors of working beyond the hours allowed by the European Working Time Directive. She found that there was evidence of a link between long working hours and percutaneous injuries and road traffic accidents.

Kuwahara (Kuwahara et al., 2014) found that there was no link between hours worked and diabetes in a sample of 40,861 workers.

van Melick (van Melick, van Beukering, Mol, Frings-dresen, & Hulshof, 2014) found that women who worked long hours during their pregnancy had a 'marginally statistically-significant[ly],' greater chance of having a premature baby.

Seong-Sik (Seong-Sik et al., 2015) studied 1,578 people in Korea. Among women, but not men, working longer than 40 hours a week showed a linear association with poor health but only among women. Seong-Sik concluded that "the worsening of self-reported health,' with increasing working hours only among women suggests that female workers are more vulnerable to long working hours because of family responsibilities in addition to their workload."

A systematic review by Virtanen (Marianna Virtanen et al., 2015) found that working 49-54 hours a week was linked to a 13% greater risk of drinking too excess while working more than 55 hours was linked to a 12% greater risk. Virtanen concluded that people "whose working hours exceed standard recommendations are more likely to increase their alcohol use to levels that pose a health risk."

Lawson (Lawson et al., 2015) found that working more than 41 hours a week was associated with a 16% higher prevalence of irregular menstrual cycles and a 93% higher prevalence of very short menstrual cycles.

Jin-Ha (Jin-Ha, Jung, Roh, Hongdeok, & Jong-Uk, 2015) found that compared to people who worked less than 52 hours a week people who worked more than 60 hours a week were 36% more likely to have suicidal thoughts if they were a man and 38% more likely if they were a women. The odds of having suicidal thoughts were higher for lower socioeconomic groups.

Milner (Milner, Smith, & LaMontagne, 2015) studied 18,420 people and found that when they were working 49-59 hours a week or more they had worse mental health than when they were working 35-40 hours. The difference was greater for women than for men. There were greater declines in mental health in relation to longer working hours among persons in higher compared to lower occupational skill levels.

Angrave (Angrave, Charlwood, & Wooden, 2015) found there were no significant associations between long working hours and the incidence of healthy levels of physical activity in a sample of 17,893 people.

Kivimäki (Kivimäki et al., 2015) found that compared to working a 35-40 hour week working 48 hours increased one's risk of stroke by 10%, working up to 54 hours increased it by 27% and working more than 55 hours increased it by 33%.

Tsai (Tsai, Huang, Li-Yin, Chiang, & Shu-Ti, 2016) found that work hours exhibited an independent relationship with turnover intention, something that was not moderated by pay satisfaction.

In a study of 13,799 people Lee (Lee et al., 2016) found that the 10-year risks for coronary heart disease and stroke were significantly and positively associated with working hours in both men and women.

Hannerz (H. P. Hannerz & Albertsen, 2016) found that there was no link between hours worked and the use of psychotropic medication.

Ryu (G. Ryu, 2016) found that having longer working hours was not significantly and negatively related to public employee wellness, whereas having a higher salary was significantly and positively associated with employee wellbeing.

Bannai (A. Bannai et al., 2016) found that non-shift worker who worked 45 hours a week did *not* have an increased risk of developing diabetes compared to those who worked 35-44 hours but that shift workers who worked 45 hours did have an increased risk.

Watanabe (Watanabe, Imamura, & Kawakami, 2016) carried out a systematic review on the links between long hours and depression concluding that "the effect of overtime work on depressive disorder remains inconclusive and may be small if not negligible."

Kim (W. Kim, Park, Lee, & Kim, 2016) found that compared with persons working 35-40 hours a week persons working over 68 hours were 57% more likely to have depressive symptoms. Persons in precarious employment who worked more than 68 hours a week were 2.03 times as likely to have depressive symptoms as those who worked 35-40 hours.

Nabe-Nielsen (Nabe-Nielsen et al., 2017) found no statistically-significant association between shift work or long working hours and dementia.

Nagaya (Nagaya, Hibino, & Kondo, 2018) found that long working hours directly and indirectly (via short sleep duration) induced headache even in apparently healthy white-collar men.

Vilde Hoff (Vilde Hoff, 2018) found a *negative* relationship between long working hours and both short- and long-term sickness absence.

In a sample of 145,861 workers in Denmark Hannerz (H. Hannerz, Larsen, & Garde, 2018) found no statistically-significant association between weekly working hours and ischaemic heart disease or antihypertensive drug usage.

Peristera (Peristera, Westerlund, & Magnusson Hanson, 2018) found that a higher burden of unpaid work and longer total working hours – indicating a double burden from paid and unpaid work – was associated with higher depressive symptoms, especially among women.

Jae-Gwang (Jae-Gwang et al., 2018) found that the prevalence of arm and leg pain increased in both sexes as weekly working hours increased.

Ganster (Ganster, Rosen, & Fisher, 2018) conducted a critical review of the literature which, he argued, failed to support a robust direct causal effect of work hours on either physical or mental well-being. Some large-scale studies supported a statistically-significant link between long work hours and heart disease but the size of the effect is very small. “Our review suggests that the effects of working long hours are nuanced in that they may vary considerably for different working populations based on gender, age, working conditions, and other factors.”

Ahn (Ahn, 2018) found that working less than 30 hours a week and more than 60 hours a week was associated with significantly higher levels of depressive symptoms. Women who worked more than 60 hours a week were at increased risk of showing depressive symptoms compared to women who worked 30-40 hours a week. No significant increase in depressive symptoms was seen in men who worked more than 60 hours a week, however, men working less than 30 hours a week were more likely to report higher levels of depressive symptoms.

Vedaa (Vedaa et al., 2018) found that long working hours were a protective factor against future sick leave.

Ryu (J. Ryu, Yoon, Kim, Kang, & Jung-Choi, 2018) found that working more than 52 hours a week had a negative effect on health, regardless of sex, although this effect was more pronounced in women. In persons working less than 40 hours a week the negative associations between working hours and self-rated health were shown only in women.

Virtanen (Marianna Virtanen et al., 2019) studied 75,709 people in France. Among men long working hours were associated with a higher body-mass index, waist circumference and waist-hip ratio, adverse lipid levels, higher blood glucose, creatinine, white blood cells and higher alanine transaminase (a marker for liver damage) with the largest differences being found for body-mass index and waist circumference. Among women long working hours were associated with body-mass index and white blood cells.

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