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# Gender differences in the association between unpaid labour and mental health in employed adults: a systematic review



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Globally, billions of hours are spent on unpaid labour every year, a burden that is disproportionately carried by women. However, the potential health effects of unpaid labour have largely been unexplored. This Review examines the gendered association between unpaid labour and mental health among employed adults. We did a search of six databases and examined the association between different forms of unpaid labour and mental health. 19 studies (totalling 70 310 participants) were included. We found substantial heterogeneity, and low-to-moderate methodological quality, in the existing research. Our Review indicates substantial gender differences in exposure to unpaid labour and confirms persistent inequities in the division of unpaid work. Overall, our findings indicate that, among employed adults, unpaid labour is negatively associated with women's mental health, with effects less apparent for men. Globally, women spend a greater number of hours on unpaid labour; this review suggests that inequities in the division of unpaid labour expose women to greater risk of poorer mental health than men.

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## Introduction

Unpaid labour is an under-researched topic, particularly as it pertains to health. Despite increasing acknowledgment of the global load of unpaid labour, both in terms of time and burden,<sup>1,2</sup> there is a paucity of public health research examining the effect of unpaid work on mental health. Importantly, unpaid labour is highly gendered. Women across the globe are still considered primarily responsible for their household's unpaid labour, spending an average of 3–6 h per day on unpaid work, while men contribute 0·5–2 h.<sup>1</sup> Moreover, many women around the world combine this unpaid work with paid employment, such that in most Organisation for Economic Co-operation and Development member countries, women spend more total time on paid and unpaid work than men do.<sup>3</sup> Importantly, this double burden has implications for women's health and wellbeing. Little or no attention has been given to how unpaid labour is associated with health or, more specifically, mental health among employed adults. This Review addresses this gap.

Although there is no universally recognised term or definition for unpaid labour (also referred to as unpaid work, unpaid care work, domestic labour or work, or household labour or work), unpaid labour is typically conceptualised as and broadly inclusive of all responsibilities and tasks done to maintain a household and its family members without any explicit monetary compensation.<sup>3–6</sup> However, to date, variation exists in how unpaid labour is conceptualised and measured. For example, some studies measure unpaid labour as inclusive of care, some solely examine housework, and others examine housework and care domains separately. In some instances, this disparity is due to data limitations, while in others caregiving is excluded due to perceived divergent values and rewards placed on care work compared to housework.<sup>3</sup> This poor uniformity reveals discrepancies that often downplay the true breadth and time burden of unpaid work, but also brings added complexity to understanding the mechanisms

through which unpaid labour is associated with mental health.

Mental health is inherently complex, with a wide range of conditions and diagnoses falling under this large umbrella term. By analysing the relationship between unpaid labour and mental health, this Review focuses on depression, anxiety, psychological distress, and general mental health, as captured by population-level studies. Mental disorders are highly gendered, with women having disproportionately higher rates of depression and anxiety compared to men worldwide.<sup>7,8</sup>

At present, the mechanisms by which unpaid labour might affect mental health are not well established. It is probable that these mechanisms vary depending on the social and cultural norms of individual populations, and across the different domains of unpaid labour. Nonetheless, the most widely acknowledged explanation considers role strain theory, whereby the combination of paid work and a high unpaid workload increases so-called role conflict and role overload, which triggers stress-related pathways and thereby can affect psychological wellbeing.<sup>9,10</sup> This theory also aligns with Strazdins' time scarcity theoretical framework,<sup>11</sup> which rationalises how time poverty and rushing (due to combining unpaid and paid work) negatively affects mental health and wellbeing.<sup>12</sup> Importantly, in this context, the drivers of role strain and time poverty are highly gendered, given that women are routinely differentially exposed to a double burden of paid and unpaid work. Moreover, as women can have poorer mental health (depression and anxiety, in particular) compared with men,<sup>7,8</sup> exploring how unpaid work might be contributing to mental health in employed populations is crucial.

A growing number of studies have examined the association between unpaid labour and mental health in the working population; however, results are inconsistent. Some authors have reported a negative association,<sup>13–16</sup> some no association,<sup>17–19</sup> and a minority report a protective effect.<sup>20,21</sup> Furthermore, although

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gender differences are ubiquitous in relation to exposure to unpaid labour, gender differences in mental health association are apparent in some studies,<sup>22,23</sup> but not in others.<sup>16,24</sup> Importantly, no previous review has examined the association between unpaid labour and mental health in the working population, or any gender differences. Two reviews<sup>25,26</sup> have examined the relationship between unpaid caregiving for elders (a subgroup of caregiving within the broader unpaid labour construct) and mental health. Both reviews found a negative association with mental health. However, given that these reviews were restricted to elder care, they did not incorporate other dimensions of unpaid labour such as household work and other care. Moreover, the caregivers in these reviews were mostly older adults, and their employment status was not considered. Additionally, a 2020 review<sup>27</sup> examined the health outcomes of unpaid carers, reporting poorer mental health for caregivers of people with ill health. However, this review did not account for employment status, adequately capture childcare, fully interrogate other aspects of unpaid labour outside of caregiving, and was limited to low-income and middle-income countries (LMICs). Therefore, there is a need to assess the relationship between unpaid labour (as a broad construct) and the mental health of employed adults, inclusive of all countries. Gender differences have also not been explored in detail. This Review addresses these gaps through synthesising and evaluating the existing evidence.

For Covidence see  
www.covidence.org

This Review aims to summarise the quantitative evidence of the gendered association between quantifiable measures of unpaid labour and mental health in employed adults, to assess variations in this relationship according to dimensions of unpaid labour, and to evaluate the quality of the international evidence on this association.

## Methods

This Review was restricted to population-based, peer-reviewed quantitative studies that made use of any observational design (ie, prospective cohort, panel studies, case-control, retrospective, or cross-sectional). Additionally, to be eligible for inclusion, studies needed to quantify the amount of unpaid labour and report associations between unpaid labour and mental health. Unpaid labour could be defined as housework, domestic work, childcare, other care, or a combination of these inclusive of care. Volunteer work was excluded. Given the focus on the effect of unpaid labour within the framework of the double burden of paid and unpaid work, the population of interest was restricted to employed adults. Studies including unemployed participants were retained if results were disaggregated by employment status, or employment status or hours of paid work were adequately controlled for in the analysis. No restrictions were placed on country of study, but

studies were excluded if English translation was unavailable. Where the same dataset was used in multiple studies, we included the most relevant or recent study covering the longest period.

Studies that were purely qualitative, descriptive, reviews, or case reports were excluded. Grey literature and theses were excluded on account of the absence of peer review. Studies that solely examined the perceived fairness of the gender distribution of unpaid labour, or that did not present separate estimates for unpaid labour (if examining total workload, both paid and unpaid) were excluded. Studies were also excluded if relevant results were not stratified by gender.

Eligible studies measured mental health outcomes by use of either a measure of mental health symptomology (such as depressive symptoms or psychological distress), or included a mental health diagnosis (eg, anxiety or depression) from a physician. Psychotic mental illnesses, such as schizophrenia, were ineligible. Studies that had stress as their outcome measure were excluded because, although stress might facilitate poorer mental health, it is not indicative of a mental health disorder.<sup>28,29</sup>

We screened the search results exported from six electronic databases using Covidence, a web-based tool for systematic reviews. Two reviewers (JE and LFA) independently screened articles (title, abstract, and full text) for inclusion. Disagreements were resolved through discussion and, where not resolved, a third reviewer (TK or YT) was consulted.

## Data analysis

We used a data extraction form to collate data from included studies on study description, author, cohort, year, country, study design, population, exposure, outcome, confounder adjustment, analytical approach, and measures of effect. Data extraction was conducted by one reviewer (JE), and crosschecked by a second reviewer (LFA). Authors of included studies were contacted to provide missing data where necessary.

The Risk Of Bias In Non-randomized Studies of Exposures (ROBINS-E) tool was made use of to assess the quality of the included studies.<sup>30</sup> ROBINS-E evaluates non-randomised evidence on the basis of comparisons to the ideal target trial. This tool is specifically designed for assessing bias in observational studies on exposures, covers a larger range of domains of bias, and reports ratings for each domain in addition to an overall score.<sup>31–33</sup> These domains are confounding, selection of participants into the study, classification of exposures, departure from intended exposures, missing data, measurement of outcomes, and selection of the reported results.

Quality assessment of studies involved a three-step process. First, the reviewers identified areas specific to the topic, such as potential confounding factors (including defining a minimal set of confounders) and the accuracy of exposure and outcome measures, considered important when assessing bias (appendix p 7).

See Online for appendix

Second, we described an ideal study that would address the review question in the context of a hypothetical target trial, which was free of bias as a reference point. Finally, two reviewers (JE and LFA) independently assessed the risk of bias for each included study compared with the ideal study across the seven ROBINS-E domains. Greater detail pertaining to the application of this tool and the specific risk assessments for each domain is described in detail elsewhere.<sup>31</sup> Risk of bias was categorised as low, moderate, serious, or severe for each domain. Domain-specific judgement for each of the seven domains was deduced from the most dominant risk of bias score within that domain. The overall risk of bias for each study was extrapolated from the highest risk of bias in any domain. We assessed the risk of bias findings by domain subgroup and risk of bias category, and any study deemed at severe risk of bias was excluded from further analysis as per the recommendations of Sterne and colleagues.<sup>34</sup>

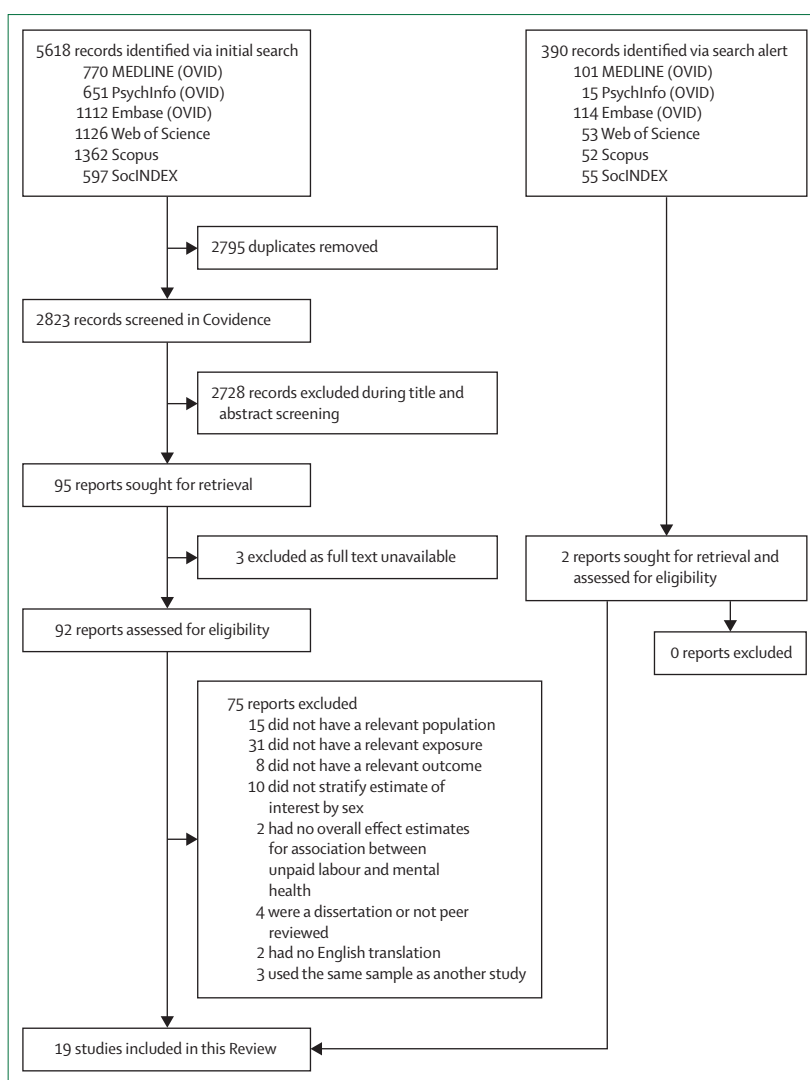
Originally, we planned to conduct a meta-analysis on contextually homogeneous studies. However, this was not possible due to between-study heterogeneity, with considerable differences in categorisation and measurement of unpaid labour among studies, and heterogeneity in statistical methods of analysis and study designs. A narrative synthesis of the data was undertaken, and characteristics of each study were described. We assessed the findings by subgroups of risk of bias, gender, and study design. Moreover, to allow for meaningful comparison, we presented results according to three exposure dimension categories that emerged as prominent types of unpaid labour: total unpaid labour (inclusive of care), housework (exclusive of care), and childcare. Of course, total unpaid labour is a broader construct than just housework and care combined. However, given how the studies included in this review have conceptualised and defined unpaid labour, it is made use of in the synthesis to delineate the three categories. Results were stratified by gender.

## Results

### Study characteristics

A total of 5618 studies were identified by the initial search. After removing duplicates, a total of 2823 records were screened by title and abstract. A further 390 records were screened from search alerts monitored until Dec 1, 2021. In total, 97 full-text articles were retrieved. Of these, 78 were excluded because they did not meet the eligibility criteria, resulting in a total of 19 eligible studies (totalling 70 310 participants) for inclusion in the systematic review (figure). The appendix (p 3) shows studies excluded at full-text review (with reasons for exclusion).

Of the 19 studies, 14 examined associations for both men and women,<sup>13,16–18,22–24,35–41</sup> and five examined women only.<sup>19,21,42–44</sup> 17 studies were cross-sectional, with only two using a longitudinal study design to examine the



**Figure:** Study selection preferred reporting items for systematic reviews and meta-analyses diagram. The 390 additional abstracts identified from search alerts were screened between July 22 and Dec 1, 2021.

association of interest.<sup>43,44</sup> Five studies were for Sweden,<sup>17,18,35,38,42</sup> four for the USA,<sup>16,24,36,39</sup> two for Canada,<sup>13,44</sup> and one each for Australia,<sup>41</sup> England,<sup>19</sup> Finland,<sup>37</sup> Ghana,<sup>43</sup> Japan,<sup>21</sup> Scotland,<sup>22</sup> Spain,<sup>40</sup> and 25 countries across Europe.<sup>23</sup> The studies varied in how they defined and analysed unpaid labour. Six studies defined unpaid labour as inclusive of unpaid care,<sup>21,35–37,43,44</sup> seven studies captured and analysed housework and childcare time separately,<sup>13,17,18,38,40–42</sup> and the remaining six studies examined only housework hours (ie, not inclusive of care).<sup>16,19,22–24,39</sup> Mental health outcomes were self-reported using validated survey measures (Kessler Psychological Distress Scale-10, Kessler Psychological Distress Scale-6, Center for Epidemiological Studies Depression scale, General Health Questionnaire-12, Subjective Health Complaints inventory, Malaise Symptom Score, and psychological distress and wellbeing indexes; table 1) for

all but two studies that both made use of a self-reported single-item question, one pertaining to mental or emotional condition,<sup>36</sup> and the other based on a previous diagnosis of a depressive illness.<sup>35</sup> A descriptive summary of included studies can be found in table 1.

**Risk of bias assessment**

We did a risk of bias assessment for each study (appendix p 8). In the evaluation of the relationship between unpaid labour time and mental health, the

overall quality of evidence in the included studies was low to moderate. No study was deemed at low risk of bias overall, seven were rated as moderate,<sup>16,18,35,38,39,43,44</sup> seven as serious,<sup>13,17,22–24,36,37</sup> and five as severe.<sup>19,21,40–42</sup> Risk of bias was most severe for the confounding domain where four studies were judged as severe risk,<sup>19,40–42</sup> five as serious,<sup>17,21–24</sup> nine as moderate,<sup>13,16,18,35–39,44</sup> and one as low,<sup>43</sup> with an overall domain-specific judgement of moderate. Risk of bias for selection of participants was mostly low (eight of 19),<sup>17,22,24,36,38,39,42,43</sup> with seven studies at moderate

Country	Study design	Sample	Exposures and measurement	Mental health outcomes	Main findings	
Blom et al (2017) <sup>42</sup>	Sweden	Cross-sectional	420; all women	Housework hours: self-reported hours spent on household tasks during a typical week. Childcare hours: self-reported hours spent on care for children during a typical week	SHC inventory (measures common health problems such as mental or physical health problems, emotional exhaustion, or problems sleeping)	Housework: a significant correlation ( $r=0.11$ ; $p<0.05$ ) between women's housework hours per week and subjective health complaints were reported. Childcare: no correlation ( $r=0.11$ ) between women's childcare hours per week and SHC
Boye (2009) <sup>33</sup>	25 European countries	Cross-sectional	13 425; 7688 women, 5737 men	Housework hours: defined as "things done around the home, such as cooking, washing, cleaning, care of clothes, shopping, maintenance of property, but not including childcare and leisure activities"; due to data limitations, the variable "hours of housework" represents the mean of the minimum and maximum possible number of hours the respondent spends on housework given the total number of h spent in their household and their share of these hours	The WHO-5 Well-being Index (constructed to measure positive psychological wellbeing)	Housework: women's wellbeing decreased with increasing housework hours ( $\beta=-0.15$ , SE 0.07, $p<0.1$ ), whereas men's wellbeing appeared to be unaffected by hours of housework ( $\beta=0.07$ , SE 0.1)
Boye (2010) <sup>37</sup>	Sweden	Cross-sectional	1277; 563 women, 714 men*	Housework hours: average hours per week estimated by respondent for buying groceries, cooking, washing dishes, laundry, ironing, other care of clothing, and cleaning. Average hours per week on childcare occasions: dropping off and picking up children at day-care centre or school, cooking dinner, and putting children to bed; average number of occasions per week: 0–24	Psychological Distress index (measures general tiredness, insomnia, nervous trouble [eg, anxiety, uneasiness, anguish], depression or deep dejection, overexertion; values: 0–15)	Housework: housework hours were not significantly associated with psychological distress in either women ( $\beta=-0.028$ , SE 0.043) or men ( $\beta=0.022$ , SE 0.029). Childcare: childcare occasions were not significantly associated with psychological distress in either women ( $\beta=-0.032$ , SE 0.025) or men ( $\beta=-0.029$ , SE 0.020)
Gilbert-Ouimet et al (2020) <sup>44</sup>	Canada	Longitudinal	1307; all women	Total unpaid labour: housework including meal preparation and cleaning the interior of the house, and childcare including who takes care of the children at home and who is responsible for childcare and activities outside the house (eg, doctor, dentist, school, or recreational activities); women indicated whether the task was: primarily done by themselves, done with the help of another person (eg, spouse, child, or someone else), primarily done by another person, or not done, which was scored; categorical exposure tertiles were derived (low, intermediate, and high) where the highest tertile indicated a high level of exposure	Psychological Distress index; French-validated short version of the Psychiatric Symptoms Index questionnaire (14 items)	Total unpaid labour: at the 3 year follow-up, the prevalence ratio (PR) of psychological distress was significantly higher among women with high unpaid labour exposure (PR 1.31; 95% CI 1.08–1.60) compared with those with low exposure; the effect was no longer significant at the 5 year follow-up (PR 0.95, 95% CI 0.76–1.18)
Glass and Fujimoto (1994) <sup>36</sup>	USA	Cross-sectional	3846; 1979 women, 1867 men	Housework hours: household labour per week not including childcare; hours of household work were calculated by summing the amount of time each respondent reported spending per week in nine different types of domestic labour, including paying bills, car repair, shopping, cooking, washing dishes, and doing laundry	Measured depression; 12-item short version of the CES-D scale	Housework: hours of household work significantly increased depressive symptomatology for both women ( $\beta=0.02$ , $p<0.05$ ) and men ( $\beta=0.03$ , $p<0.01$ )

(Table 1 continues on next page)

risk,<sup>16,18,19,23,35,37,44</sup> three at serious risk<sup>13,40,41</sup> and one at severe risk.<sup>21</sup> Risk of bias in classification of exposures was uniformly moderate with the exception of three studies rated as serious.<sup>19,21,40</sup> Apart from two studies, which were judged as moderate risk of bias due to departure from intended exposure,<sup>24,44</sup> the remaining studies were deemed to be at low risk of bias. For risk of bias due to missing data, five studies were rated at serious risk of

Country	Study design	Sample	Exposures and measurement	Mental health outcomes	Main findings	
(Continued from previous page)						
Harryson et al (2012) <sup>38</sup>	Sweden	Cross-sectional	723; 371 women, 352 men	Housework responsibility: domestic work—participants were asked “how much of the responsibility for domestic work do you take?”; the five answer options were: nothing=1, less than half=2, half=3, more than half=4, whole responsibility=5; the five categories were modelled with “half of the responsibility” as the reference category. Childcare responsibility: participants were asked “how much of the responsibility for childcare do you take?”, which was operationalised with the same method as per domestic work	Psychological Distress index (measures restlessness, concentration problems, worries or nervousness, palpitations, anxiety, and other nervous distress)	Housework: taking whole responsibility for domestic work was associated with increased psychological distress among women (OR=2.17, 95% CI 1.05–4.48), but no association was found for men (OR=2.10, 95% CI 0.88–5.04); for men, doing less than half the domestic work was associated with psychological distress (OR=2.25, 95% CI 1.29–3.91); the authors stated that multivariate logistic regression analysis of time spent on household work and psychological distress showed no associations for women or men, however no estimates were reported in the paper. Childcare: taking whole responsibility for childcare was not associated with increased psychological distress for either women (OR=1.96, 95% CI 0.93–4.11) or men (OR=2.55, 95% CI 0.90–7.17) in the adjusted model
Hoshino et al (2016) <sup>21</sup>	Japan	Cross-sectional	70; all women; 35 with depression, 35 without	Total unpaid labour hours: housekeeping workload (measured in h per day) defined as the labour to maintain daily life including care for family members	Measured depression; CES-D scale (20 items)	Total unpaid labour: quantitative housekeeping workload (h per day)—one of seven dimensions of housekeeping stress that were measured—had a slight protective effect on the odds of depression (OR=0.665, 95% CI 0.477–0.927).
Hunt and Annandale (1993) <sup>22</sup>	Scotland	Cross-sectional	597; 270 women, 327 men	Housework hours: domestic work hours over an average period of 7 days; household tasks were food shopping, planning and cooking meals, handling of bills, vacuuming, cleaning, washing the dishes, washing clothes, and ironing	Malaise Symptom Score (difficulty sleeping, trouble with nerves, difficulty concentrating, worrying over every little thing, depression, poor appetite, feeling run down, and always feeling tired)	Housework: greater hours in domestic work were associated with more malaise symptoms in women ( $\beta=0.15$ , $p=0.01$ ), but was insignificant among men (estimates not reported)
Kalmijn and Monden (2011) <sup>39</sup>	USA	Cross-sectional	5132; 2566 women, 2566 men	Housework hours: household labour (h per week) was measured by asking how much time the person spends per week on nine different household tasks: preparing meals, doing the dishes, cleaning, outdoor repairs, washing, shopping, doing the bills, car maintenance, and driving for errands; the authors summed the number of hours across tasks to obtain a measure of household labour	Measured depression; CES-D	Housework: for both men and women, doing more hours of household work was associated with more depressive symptoms; the estimate was the same for both men and women ( $\beta=0.03$ , $SE=0.01$ ).
Krantz et al (2005) <sup>43</sup>	Sweden	Cross-sectional	1338; 743 women, 595 men	Housework hours: average hours per week spent on household duties (eg, mending, sewing, laundry, and gardening); categorised into greater or lesser than 20 h per week. Childcare hours: average hours per week spent in childcare (eg, homework or teaching, caretaking, and playing with children); categorised into greater or lesser than 21 h per week	Measured general distress; interpreted from common physical and psychological symptoms (ie, their frequency and severity) that serve as a proxy for distress: stomach pain, headache, sleep disturbances, dizziness, low back pain, loss of appetite, and shoulder and neck pain	Housework: there was no association between spending greater than 20 h per week on household work and the odds of high-level general distress for women (OR=1.13, 95% CI 0.81, 1.58) or men (OR=1.11, 95% CI 0.54, 2.28). Childcare: there was no association between spending greater than 21 h per week on childcare and the odds of high-level general distress for women (OR=0.95, 95% CI 0.59–54) or men (OR=1.04, 95% CI 0.50–2.15)

(Table 1 continues on next page)

	Country	Study design	Sample	Exposures and measurement	Mental health outcomes	Main findings
(Continued from previous page)						
Matud et al (2015) <sup>40</sup>	Spain	Cross-sectional	2588; 1251 women, 1337 men	Housework time: daily time (min per day) devoted to housework. Childcare time: daily time (min per day) devoted to childcare	Measured psychological distress; assessed by use of the subscales of severe depression, anxiety, and insomnia and somatic symptoms of the Scaled Version of the General Health Questionnaire (21 items)	Housework: daily time spent on housework was associated with psychological distress for men ( $\beta=0.01$ , SE 0.01) but not for women ( $\beta=0.00$ , SE 0.01). Childcare: daily time spent on childcare was associated with women's distress ( $\beta=0.01$ , SE 0.01) but not with men's ( $\beta=0.00$ , SE 0.00)
Molarius and Metsini (2021) <sup>35</sup>	Sweden	Cross-sectional	14 184; 7981 women, 6203 men	Total unpaid labour hours: average hours per week on domestic unpaid work (eg, taking care of children, nursing relatives, buying the groceries, cooking, paying the bills, washing the laundry, cleaning, and taking care of a car, a house, or a garden); categorised into greater or lesser than 20 h per week	Diagnosed depression (self-reported); assessed with the following question: "Do you have any of the following diagnosed illnesses?" where depression was one of the illnesses listed (with answer options of yes or no)	Total unpaid labour: there was no overall association between spending more than 20 h per week on unpaid labour and self-reported diagnosed depression among men (OR=0.99, 95% CI 0.71-1.37); among women, a weak inverse association was found in the fully adjusted model (OR=0.77, 95% CI 0.64-0.93)
Noor (1997) <sup>39</sup>	England	Cross-sectional	153; all women	Housework hours: hours per day spent on household chores, excluding time on childcare	Measured psychological distress; measured by the 12-item General Health Questionnaire (includes items that pertain to both somatic and affective symptoms of distress)	Housework: time spent on housework was not related to women's psychological distress scores ( $\beta=0.093$ , no SE reported)
Owoo and Lambon-Quayefio (2021) <sup>43</sup>	Ghana	Longitudinal	5298; all women	Total unpaid labour hours: domestic work time (min per day) spent on 11 domestic activities: collecting firewood, fetching water, going to the market, running other errands, doing the laundry, cleaning, cooking, taking care of elders, taking care of the sick, doing the dishes, and taking primary care of children	Measured psychological distress; Kessler Psychological Distress Scale	Total unpaid labour: time spent in domestic work was associated with worse mental health outcomes (domestic work min $\beta=0.0001$ , $p<0.01$ )
Piovani and Aydiner-Avsar (2021) <sup>36</sup>	USA	Cross-sectional	890; 398 women, 492 men	Total unpaid labour hours: unpaid work time (h per week) spent on unpaid assistance provided to parents, in-laws, children, grandchildren, other family members, and friends, and time spent on household chores	Measured emotional distress; self-reported mental health via a single question as to whether the respondent agrees, or strongly agrees, with the following statement: "The demands of everyday life often get me down" (binary answer with a value of 1 for agree or strongly agree, and 0 for any other answer)	Total unpaid labour: time spent on unpaid work contributed to women's emotional distress (OR=1.021, $\uparrow$ SE 0.007, $p<0.01$ ), but not men's (OR=0.990, SE 0.008)
Prins et al (2019) <sup>34</sup>	USA	Cross-sectional estimate within longitudinal study	12 423; 6759 women, 5664 men	Housework hours: domestic labour (h per week) spent on cooking, cleaning, and other work around the house	Measured psychological distress; Kessler Psychological Distress Scale	Housework: an increase in housework hours was significantly associated with increased moderate and serious mental illness for both men and women (presented graphically in the paper with no estimates)
Strazdins et al (1997) <sup>41</sup>	Australia	Cross-sectional	204; 102 women, 102 men	Housework hours: housework was assessed by five repetitive and routine household tasks: cooking, tidying, cleaning up after meals, doing laundry, and shopping; all participants rated their involvement for each of the 5 categories relative to their partner, using a 7-point scale ranging from partner does all (1) to self does all (7); items were summed and averaged. Childcare hours: childcare was assessed by seven items about physical maintenance of children, such as changing nappies, toileting, and getting up with the child at night; scaled and summed as per housework exposure	Measured depression; CES-D scale	Housework: no significant correlation between housework and depressive symptoms was reported for either men ( $r=0.11$ ), or women ( $r=0.00$ ). Childcare: no significant correlation between childcare and depressive symptoms was reported for either men ( $r=0.01$ ), or women ( $r=0.11$ )

(Table 1 continues on next page)

Country	Study design	Sample	Exposures and measurement	Mental health outcomes	Main findings	
(Continued from previous page)						
Tao et al (2010) <sup>33</sup>	Canada	Cross-sectional	293; 182 women, 111 men	Housework time: housework (perceived relative time spent) was assessed by eight housework tasks (eg, washing dishes and paying bills); for each household task, participants were asked to indicate, on a 5-point interval scale, how much of the work they typically perform compared to their partner: 1=very little to none, 2=some, 3=about half, 4=most, and 5=all; responses to the items were summed and scores could range from 8 to 40. Childcare time: childcare (perceived relative time spent) assessed by five child rearing tasks (eg, playing with children, and travel for children); each of the five tasks were scored on a 5-point scale as per housework; responses to the items were summed and scores could range from 5 to 25	Measured psychological distress; Kessler-6 Psychological Distress Scale	Housework: total perceived relative time spent in housework did not significantly contribute to psychological distress in either men ( $\beta=0.03$ ), or women ( $\beta=0.13$ ). Childcare: total perceived relative time spent in child rearing was associated with psychological distress in women ( $\beta=0.19$ , $p < 0.01$ ), but not in men ( $\beta=0.09$ )
Väänänen et al (2004) <sup>37</sup>	Finland	Cross-sectional	6442; 4952 women, 1490 men	Total unpaid labour hours: domestic work (h per week) devoted to unpaid work such as childcare, care of other relatives, housework, and other unpaid obligations; assessed through classification into one of four categories: up to 10 h, 11–25 h, 26–50 h, and more than 50 h per week	Measured psychological distress; measured by the 12-item General Health Questionnaire (includes items that pertain to both somatic and affective symptoms of distress)	Total unpaid labour: compared with low hours (<10 h) of domestic work per week, higher hours (>25 h per week) were associated with psychological distress in women (26–50 h per week OR=1.38, 95% CI 1.09–1.75 and >50 h per week OR=1.35, 95% CI 1.04–1.77), but not in men (26–50 h per week OR=1.27, 95% CI 0.85–1.91, and >50 h per week OR=0.98, 95% CI 0.56–1.73); 11–25 h per week was insignificant for both men and women
CES-D=Center for Epidemiological Studies Depression. OR=odds ratio. SHC=Subjective Health Complaints. *The Swedish sample in this study is different to the Swedish sample that contributes to the European Survey data used by Boye and colleagues. <sup>23</sup> †The OR for a 1 h change in work time is 1.021; the author also reported the OR for a change of 10 h (OR=1.221) and 5 h (OR=1.105); such that, the ORs for a developing emotional distress increase by 22% in response to a 10 h increase in unpaid work time for example.						
<b>Table 1: Descriptive summary of included studies</b>						

bias,<sup>13,22,24,37,40</sup> four at moderate risk<sup>16,36,41,44</sup> and the remaining ten<sup>17–19,21,23,35,38,39,42,43</sup> (and the overall domain item) were judged as low risk of bias. The risk of bias judgement for outcome measurement was consistently moderate (17 of 19), apart from one study judged as low risk<sup>21</sup> and another deemed at serious risk of bias.<sup>36</sup> Lastly, in the final of the seven ROBINS-E domains, risk of bias in selection of the reported results, most studies were assessed as low risk of bias, except for three studies rated as moderate,<sup>18,22,38</sup> and one study as serious risk.<sup>21</sup> The risk of bias for the two studies using a longitudinal design was low to moderate for all ROBINS-E domains of bias, providing the strongest evidence at the lowest risk of bias for the review overall (appendix p 8).<sup>43,44</sup>

The main findings for all papers (including effect estimates and confidence parameters where reported) are summarised in table 1; however the five studies assessed as severe risk of bias<sup>19,21,40–42</sup> were excluded from the synthesis.

### Synthesis

Of the 14 studies (totalling 66 875 participants) eligible for inclusion in the narrative synthesis, five examined total unpaid labour.<sup>35–37,43,44</sup> Of these, two exclusively

examined women,<sup>43,44</sup> and three looked at both men and women.<sup>35–37</sup> Of the three studies that examined both men and women,<sup>35–37</sup> two studies reported a negative association between mental health and unpaid labour for women, but no association for men,<sup>36,37</sup> and one study reported a weak inverse relationship for women and no association for men.<sup>35</sup> Of the two studies that only examined women, both reported poorer mental health with increasing time in unpaid labour.<sup>43,44</sup>

Nine studies examined housework as a dimension of unpaid labour for both women and men.<sup>13,16–18,22–24,38,39</sup> For women, six studies reported a relationship between more housework and poorer mental health,<sup>16,22–24,38,39</sup> and three reported no association.<sup>13,17,18</sup> For men, three studies reported an association between more housework and poorer mental health,<sup>16,24,39</sup> and six reported no association.<sup>13,17,18,22,23,38</sup>

Of the nine studies that examined housework, four also examined childcare as a separate dimension of unpaid labour for both men and women.<sup>13,17,18,38</sup> Three studies reported no association between childcare and mental health for either women or men.<sup>17,18,38</sup> One study reported a negative association between childcare hours and mental health for women, but not for men.<sup>13</sup>

	Risk of bias	Total unpaid labour		Housework		Childcare	
		Women	Men	Women	Men	Women	Men
<b>Longitudinal (n)</b>							
Gilbert-Ouimet et al, 2020 (1307) <sup>44</sup>	Moderate	Significant negative association; prevalence ratio	..	..	..	..	..
Owoo et al, 2021 (5298) <sup>43</sup>	Moderate	Significant negative association; $\beta$	..	..	..	..	..
<b>Cross sectional (n)</b>							
Molarius and Metsini, 2021 (14 184) <sup>35</sup>	Moderate	Significant positive association; OR	No significant association; OR	..	..	..	..
Piovani and Aydiner-Avsar, 2021 (890) <sup>36</sup>	Serious	Significant negative association; OR	No significant association; OR	..	..	..	..
Väänänen et al, 2004 (6142) <sup>37</sup>	Serious	Significant negative association; OR	No significant association; OR	..	..	..	..
Harryson et al, 2012 (723) <sup>38</sup>	Moderate	..	..	Significant negative association; OR	No significant association; OR	No significant association; OR	No significant association; OR
Krantz et al, 2005 (1338) <sup>18</sup>	Moderate	..	..	No significant association; OR	No significant association; OR	No significant association; OR	No significant association; OR
Boye, 2010 (1277) <sup>17</sup>	Serious	..	..	No significant association; $\beta$	No significant association; $\beta$	No significant association; $\beta$	No significant association; $\beta$
Tao et al, 2010 (293) <sup>13</sup>	Serious	..	..	No significant association; $\beta$	No significant association; $\beta$	Significant negative association; $\beta$	No significant association; $\beta$
Glass and Fujimoto, 1994 (3846) <sup>36</sup>	Moderate	..	..	Significant negative association; $\beta$	Significant negative association; $\beta$	..	..
Kalmijn and Monden, 2011 (5132) <sup>39</sup>	Moderate	..	..	Significant negative association; $\beta$	Significant negative association; $\beta$	..	..
Boye, 2009 (13 425) <sup>23</sup>	Serious	..	..	Significant negative association; $\beta$	No significant association; $\beta$	..	..
Hunt and Annandale, 1993 (597) <sup>22</sup>	Serious	..	..	Significant negative association; $\beta$	No significant association; $\beta$	..	..
Prins et al, 2019 (12 423) <sup>24</sup>	Serious	..	..	Significant negative association; predicted probability	Significant negative association; predicted probability	..	..

OR=odds ratio.

Table 2: Summary of results

Finally, only two of the 14 studies made use of a longitudinal design to interrogate the relationship between unpaid labour and mental health. These two studies were those that examined total unpaid labour in women only, with both reporting adverse mental health effects with increasing time in unpaid labour.<sup>43,44</sup>

The results for studies included in this narrative synthesis and their respective risk of bias assessments are summarised in table 2. As a quasi-sensitivity analysis, we considered whether our conclusions would be altered if we only included the results of the seven studies<sup>16,18,35,38,39,43,44</sup> at the lowest risk of bias overall (ie, all those judged at moderate risk of bias overall) in the narrative synthesis. This restriction did little to alter our overall findings but did strengthen the negative association between unpaid labour and mental health for the housework domain.

### Discussion

To our knowledge, this is the first systematic review of the quantitative literature examining the association between unpaid labour and mental health among

employed adults. We also interrogated the gender differences. The overall quality of the evidence was low to moderate, with five of the 19 studies excluded from synthesis due to severe risk of bias. Of the 14 studies included in the narrative synthesis, five examined total unpaid labour,<sup>35–37,43,44</sup> four examined both housework and childcare as separate exposures,<sup>13,17,18,38</sup> and five examined housework only.<sup>16,22–24,39</sup> Considering the effect estimates reported in the included studies, across all three exposure dimensions, the results of this Review suggest an overall negative association between unpaid labour and mental health for employed women. By contrast, most of the included studies reported no association for working men. However, given the heterogeneity of the exposure across the included studies, and the predominantly cross-sectional study design (with only two of the 14 analysed studies making use of longitudinal methodology; both studying women only), this Review cannot draw robust conclusions about the overall effect of unpaid labour on mental health.

Our Review indicates substantial gender differences in exposure to unpaid labour and confirms persistent inequities in the division of unpaid work, with every study reporting women doing more, regardless of their geographical or temporal setting. Substantive policy levers, such as universal childcare and normalising flexible working arrangements for men, are urgently required to start shifting this normative position.

Differential exposure probably influenced our results, as the sample sizes for men (particularly in studies categorising unpaid labour time) were often small in the groups with high unpaid labour. Nonetheless, the overall results of this Review do suggest that unpaid labour is less likely to be associated with poorer mental health in men (with only three of 12 studies reporting an association, all of which were for housework). Men might be less vulnerable to the negative impact of unpaid labour on mental health for several reasons. For example, men might have greater mental health resilience due to differing coping styles and emotional responses;<sup>45</sup> however, a meta-analysis found that women's coping strategies are more effective than men's.<sup>46</sup> Another more credible rationale for the discrepancy could be the gendered divisions in the type of unpaid labour or household tasks. For example, men commonly do the less time sensitive, high-schedule-control jobs within the household, such as outdoor or maintenance tasks, which might be more enjoyable and possibly protective.<sup>13,35</sup> Furthermore, women carry the greater mental load of household labour; therefore one unpaid hour is considered denser or more impactful for women than for men, and therefore might not be directly comparable.<sup>47</sup>

Additionally, powerful and entrenched sociocultural expectations surrounding the gendered division of unpaid labour probably strongly influence how time pressures and family-work conflicts are experienced.<sup>48</sup> For example, many societies have traditionally placed so little expectation on men in the unpaid labour domain, that those men who do contribute more than the norm are highly praised and receive positive rewards for their efforts.<sup>49,50</sup> In a small, qualitative study in Sweden, the stereotypical gender structures in the division of housework reportedly influenced women's stress and wellbeing.<sup>51</sup> Moreover, another study reported an experiential gender gap in increasing housework time, where housework time for women was associated with feeling stressed, and for men it was more associated with feeling unaccomplished in one's daily goals than for women.<sup>47</sup> Furthermore, aligned with our findings, a scoping review<sup>52</sup> examining the intermediary determinants of gender inequalities in mental health identified that, within the domestic and care domains, the burden of employment and unpaid work, having children at home, and inequity in couple relationship were all risk factors for women, whereas fatherhood was protective for men.<sup>52</sup> Therefore, it is likely that the mechanisms through

which unpaid labour influences mental health differ for men and women. However, given women's higher average exposure to unpaid work, it remains unclear whether women are differentially vulnerable to the effects of unpaid labour on mental health.

Assessment of the relationship between unpaid labour and mental health according to the different dimensions of unpaid labour is problematic due to substantial between-study heterogeneity. However, four studies did examine the association between mental health and two different dimensions of unpaid labour (housework and childcare) separately.<sup>13,17,18,38</sup> For women, a negative association between housework and mental health was reported in one of these studies,<sup>38</sup> and for childcare in another,<sup>13</sup> but no associations were reported for men. Therefore, among these four studies, childcare and housework appear to be similarly associated.

Nonetheless, as so few studies are available, further research is needed. No studies examined all three dimensions of unpaid labour separately, which is a noteworthy gap in the extant research, so comparisons between total unpaid labour, housework, and childcare are not possible. However, acknowledging between-study differences, findings from the studies that examined total unpaid labour suggest more of a negative association for women in this dimension than for housework or childcare. Of note, although only three studies examined total unpaid labour for men, all reported no association. Therefore, with the current evidence for men, it is only within the housework domain where any negative association is evident, albeit in a minority of studies. As such, the results of this Review suggest that, although further research is required, variations might exist in how the different dimensions of unpaid labour are experienced, not only by gender, but also by type of unpaid labour.

Considering the mechanisms through which unpaid labour could influence mental health, the five studies that assessed total unpaid labour identified in this Review came closest to capturing the breadth and time burden of unpaid work for employed individuals. The combination of a high unpaid workload with paid working commitments can lead to both role strain<sup>9,10</sup> (ie, role overload and role conflict), and time poverty,<sup>11,12</sup> both of which can negatively affect mental health and wellbeing. Importantly, two longitudinal studies,<sup>43,44</sup> included in this Review, suggest that these resulting issues could be the case for employed women with high total unpaid burden—supporting the work from Peristera and colleagues,<sup>53</sup> who found that high unpaid workloads among the Swedish working population was associated with higher depressive symptom trajectories. The mechanisms are possibly more nuanced for housework and childcare. Although time poverty and role strain might also contribute to the negative association identified within these subgroups, the literature posits additional mechanisms. The negative effects of

For PROSPERO registration see  
[https://www.crd.york.ac.uk/prosperto/display\\_record.php?ID=CRD42021270466](https://www.crd.york.ac.uk/prosperto/display_record.php?ID=CRD42021270466)

housework could also be attributed to the tasks being perceived as mundane, undervalued (eg, by others in the household or by wider society), and disliked,<sup>9,54</sup> and historically being regarded as dirty, contaminated work.<sup>55</sup> Conversely, childcare is seen as more enjoyable and meaningful than housework, and therefore is potentially protective.<sup>5</sup> However, our Review suggests otherwise, as childcare and housework were both negatively associated with mental health (when an association was reported). However, given the small number of studies that examined these domains separately, further research is needed to understand these associations, and the mechanisms that drive them.

Moreover, there was a chronological pattern to how unpaid labour was interrogated in the included studies. Older studies more commonly examined housework, whereas literature from 2020 and 2021 examined unpaid labour inclusive of care. Four of these recent studies included care of a relative or elder within their definition of unpaid labour,<sup>35–37,43</sup> and, although comparisons cannot be made between this Review and the literature (given the different exposure and populations being examined), three reviews reported an increased risk of poorer mental health in those caring for older adults<sup>25,26</sup> and people with ill health.<sup>27</sup>

Although the identified evidence was sparse and heterogenous, this Review highlights some significant associations between any category of unpaid labour and poorer mental health. Importantly, where we report an association between any category of unpaid labour and poorer mental health, the reported estimates were modest (table 1). Most studies reported the effect estimate on a continuous scale, whereby a 1 h increase in unpaid labour per week led to small but significant changes in mental health status. The observed effects are more interpretable when the mental health effects for a 10 h increase in unpaid labour time per week are extrapolated. For the three studies<sup>16,39,43</sup> that were not at severe or serious risk of bias, that measured unpaid labour as a continuous measure, and that reported a significant effect there was a 0.2–0.4 point increase in the estimated mean depression score (Kessler Psychological Distress Scale-6 and Center for Epidemiological Studies Depression scale) for every 10 h increase in unpaid labour time. A study at serious risk of bias reported a 22% relative increase in the odds of emotional distress for a 10 h increase in unpaid work time.<sup>36</sup> By contrast, other studies divided unpaid labour into categories, two of which used an arbitrary cut-off point of 20 h per week for high versus low unpaid labour times. There is no universally accepted point at which unpaid labour is deemed too high or unmanageable, and substantial between-person differences in personality traits, home standards, preferences, and acceptability of competing time trade-offs complicate this assessment<sup>9,56,57</sup> Moreover, a potential downfall of assessing unpaid labour as categorical rather than

### Search strategy and selection criteria

This systematic review was prospectively registered on PROSPERO (CRD42021270466) and followed the guidelines of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA).<sup>59</sup>

A two-tiered search strategy was developed in Medline (OVID) and subsequently applied across all databases. The first tier included key words related to unpaid labour or work and the second tier focused on common mental health outcomes. Tiers 1 and 2 were combined using Boolean operators. A complete list of search terms (including MeSH terms) and strategies for each database is available in the appendix (p 1). Literature searches were conducted on six electronic databases: Medline (OVID), Embase (OVID), PsycInfo (OVID), SocINDEX (EBSCO), Scopus, and Web of Science (with no publication date restrictions). Search alerts were set for each database and screening continued until Dec 1, 2021. References of included studies were also screened to identify additional papers.

continuous is the risk of losing sensitivity and, especially in a cross-sectional study design, the risk of reverse causation, in which people who have better mental health are more likely to be in the higher categories of unpaid labour time. Although most effect estimates synthesised in this Review are modest, the differences observed in women's mental health as a result of increasing unpaid labour across these studies probably accounts for more important differences in women's mental health risk at a population level.<sup>58</sup>

This Review has some limitations. First, a key challenge in interrogating the relationship between unpaid labour and mental health is the potential for reverse causation or endogeneity. Most of the included studies were cross-sectional in design, limiting causal inference. Second, by restricting this Review to people who are employed, our results could have been affected by selection bias due to the healthy worker effect—probably biasing estimates towards the null. Third, both the exposure and outcome variables of interest were mainly self-reported in the included studies. Although the mental health outcomes were largely validated measures, self-reported unpaid labour measures were particularly susceptible to misclassification bias. Restricting the Review to the published peer-reviewed literature also introduced a risk of publication bias. Fourth, the findings might not be generalisable, as the majority of the studies were from high-income countries. Substantial heterogeneity exists between high-income countries with respect to the gender norms and social policies that influence unpaid labour, and even greater relative gender inequity issues persist in many LMICs.<sup>2</sup> Finally, some of the included studies were done before 2000, and could therefore be of less relevance to the current social context.

## Conclusion

Unpaid labour is associated with poorer mental health in women, but the effects are less apparent for men. Given that women spend a greater number of hours on unpaid labour worldwide, the findings of this Review suggest that continued inequities in the division of unpaid labour expose women to greater risk for poorer mental health than men. This Review also highlighted substantial heterogeneity and low-to-moderate methodological quality in the existing research, which made drawing definitive conclusions difficult. Further robust longitudinal research is required to investigate the relationship between unpaid labour and mental health, and to interrogate the nuance between the different dimensions of unpaid labour identified in this Review.

### Contributors

JE conceived the study. JE, TK, YT, and BH designed the study and did the literature search. JE and LFA screened, extracted, and analysed the data. TK and YT did the data analysis and interpretation. JE wrote the draft and made the figures and tables. All authors contributed to the Review drafts.

### Declaration of interests

JE receives a yearly stipend (University of Melbourne Research Training Scholarship) while undertaking their PhD. All other authors declare no competing interests.

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