SIPHER Consortium

Systems science
In Public Health and
Health Economics Research

Employment and Health Mapping Report:

Evidence and Gap Map of Systematic Reviews

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Contents

Key Findings

239 reviews included in the map
163 underwent a narrative synthesis
43 underwent a meta-analysis
24 underwent a meta-analysis and meta-regression

Work participation was the main exposure grouping explored
Psychological health was the main outcome grouping explored

'General health' was the most reported physical health outcome
'Mental health' was the most reported psychological health outcome

Emerging 'missing' areas for exploration

Younger workers, those working in the informal sector, minority groups, the impact of employment on social wellbeing, the impact of employer attributes of health and wellbeing, impact of certain working patterns (overtime/part-time/unpredictable) on health and wellbeing, and the impact of work-non-work interaction on health.

Access SIPHER Employment and Health Evidence and Gap Map
https://eppi.ioe.ac.uk/cms/Portals/35/Maps/SIPHER_EMPLOYMENT_HEALTH.html
Technical Overview - - https://intranet.sphsu.gla.ac.uk/pg/#gapmaplink

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Background:

SIPHER has been exploring the policy area of inclusive economies over the past two years, with the aim of mapping and modelling relationships between inclusive economies and health outcomes. To support this work, our Evidence Synthesis Workstrand 2 has created an evidence and gap map (EGM) exploring the relationship between employment and health outcomes.

The aims of the employment and health evidence and gap map within SIPHER are to:

- Collate evidence from recent systematic reviews reporting on the relationship between employment (including unemployment) and health at the population level.
- Inform SIPHER's understanding of the pathways and causal links between characteristics of employment and health (including health inequalities) for use in modelling and decision support tool development.
- To highlight gaps and opportunities for future research and to provide a tool for identifying relevant research for policymakers.

This report provides a brief 'technical' overview of the EGM, focusing on the process that was undertaken and the methods used to produce it for those interested. The full protocol can be found separately. Instructions on how to use and interpret the map are provided separately. This report does not summarise emerging findings.

Glossary of key terms:

***Systematic review**:* These can be seen as a study of studies. By defining a question, they aim to bring together all existing evidence on a specific topic in order to answer it. There are different methodologies that can be used.

***Primary study**:* A type of study that collects new evidence through a range of techniques such as interviews, questionnaires, data analysis and observations.

***Exposure**:* This is a factor that influences an outcome, in this case, a factor related to employment-related to a health outcome.

***Evidence and gap map - EGM**:* A visual, interactive way of presenting the evidence in an area.

Search strategy: A detailed and organised systematic way of searching the literature that identifies a structure of key terms. This enables the search to be repeated by others.

***Screening**:* An initial assessment of the review to determine whether it should be looked at further in the preliminary stage and then included in the full-text stage.

***Coding**:* In this context, this refers to selecting the exposures and outcomes that are considered within the review to enable the creation of the map.

***Type of synthesis**:* The approach review authors have taken to summarise findings.

Policy partners: Members of the three policy organisations within SIPHER; the Scottish Government, Greater Manchester Combined Authority and Sheffield City Council.

Methods

Literature search

Due to the breadth of the topic, a targeted search strategy was used to identify review-level evidence around the broad concepts of employment and health. Priority was given to results where the key terms occurred in article titles and indexing or were found in close proximity to other relevant terminology. Databases were searched from inception although a decision was later taken to apply a date limit of reviews from 2010 onwards.

An updated literature search was completed in November 2021 to capture the literature published within the 2020-2021 period, and therefore account for factors impacted by the Covid-19 pandemic.

An example search strategy from Ovid MEDLINE is reproduced in Appendix 1.

Study selection and coding

Study selection, coding and generation of the map were performed with the aid of EPPI-Reviewer and EPPI-Mapper software (EPPI-Centre, University College London, UK). Most processes involved two reviewers acting independently and resolving any discrepancies by discussion and consensus. Coding decisions were checked by the lead reviewer to ensure consistency.

Inclusion criteria

Reviews were eligible for inclusion if they met at least three of the following criteria:

- Inclusion/exclusion criteria specified
- Adequate search
- Synthesis of included studies (quantitative, qualitative or narrative synthesis)
- Quality of included studies assessed
- Sufficient details of individual included studies reported

Eligible reviews could include any type of primary study. Reviews did not have to describe themselves as systematic reviews, and mapping or scoping reviews were eligible. Reviews published in English since 2010 were eligible.

Other inclusion criteria were as follows:

- **Population**: Adults and adolescents in OECD countries. Reviews could include studies of general populations or specific groups, e.g. shift workers or remote workers. Prior to coding, included reviews were graded as ‘core’ or ‘peripheral’ based on the population inclusion criteria (Table 1). Further coding for the initial version of the EGM was limited to ‘core’ reviews.
- **Intervention or exposure**: The literature search focused on the relationships between employment and health exposures. Relevant systematic reviews were included regardless of whether or not they evaluated a specific intervention. Reviews that evaluated an intervention without reporting any data on relevant exposures in the context of the relationship between employment and health were excluded from the current map but were identified by the literature search and may be included in future updates. These were also labelled as peripheral and excluded within the EGM.

- **Comparator**: Reviews of studies with and without comparators or controls were included.
- **Outcomes**: Physical and mental health-related outcomes/exposures, including but not limited to morbidity, mortality, prevalence and incidence of conditions and life expectancy. Employment-related outcomes/exposures, including but not limited to unemployment, productivity, absenteeism, in-work poverty, career progression and employment sustainability. Secondary outcomes included intermediate outcomes on the employment ↔ health pathway and health inequalities.

Evidence and Gap Map Framework

Creation Map dimensions

Given the focus of our research topic we used an exposure (rows) and outcomes (columns) framework for the EGM.

The exposures include workplace attributes such as employment conditions, working environment, working patterns, and working population characteristics. The outcomes include both physical and mental health outcomes and social and economic outcomes for individuals. We also include impacts at a societal level including the impact on inequalities.

We have included other factors that may act as filters/moderators, including age, gender, welfare policy and dose-response based on stakeholder discussions and their areas of interest.

Coding

The coding framework was developed iteratively by the review team with input from members of the wider SIPHER team including our policy partners. An initial framework (Table 3) used categories derived from the studies in the umbrella review, making the scheme unsuitable for identifying gaps in the evidence base.

Several subsequent versions of the framework were piloted on small samples of reviews to inform the development of the final version in an iterative process.

Stakeholder engagement

The development of the map, particularly the coding framework, was informed by input from academic members of the SIPHER team and representatives of policy partners (Sheffield City Council, Greater Manchester Combined Authority and Scottish Government). Representatives of patient groups and the general public will be involved in future development, updating and evaluation of the map.

Table 1: Literature-derived categories for included reviews

Population characteristics	Workplace attributes/exposures	Outcomes
Employed Unemployed Gender Older population Younger populations Returning to work Global regions Minority groups People with a criminal record Parents People with conditions/attributes (health, psychosocial, mental)	Social/political/policy/economic environment (welfare policy, economic stress) Work participation/access to work Employer features (size, sector) Employment/contract conditions ● Financial aspects – low paid and minimum wage ● Insecure employment – the threat of redundancy Working environment ● Physical workplace (lighting, furniture, sitting, sedentary, remote working) ● Exposure to harmful factors (stress/ solvents, noise) ● Particular types of work (industrial, human service, pushing - pulling) ● Organisational culture: leadership and management, effort reward imbalance ● Working patterns (flexible working, long hours, commuting unemployment/under-employment, exit from work)	Physical health Health system contacts/resource use ● Sick leave Mental health: depression; suicide; anxiety; serious mental illness/psychosis; addictions Negative wellbeing: stress; burnout; absenteeism/presenteeism; Positive wellbeing: personal development; job satisfaction; financial security; self-esteem Work related injuries and accidents Health behaviours (including substance use, diet)

Results

After screening 4,087 unique references, we included 239 reviews in the EGM. The results of the screening process are visually presented in Figure 1.

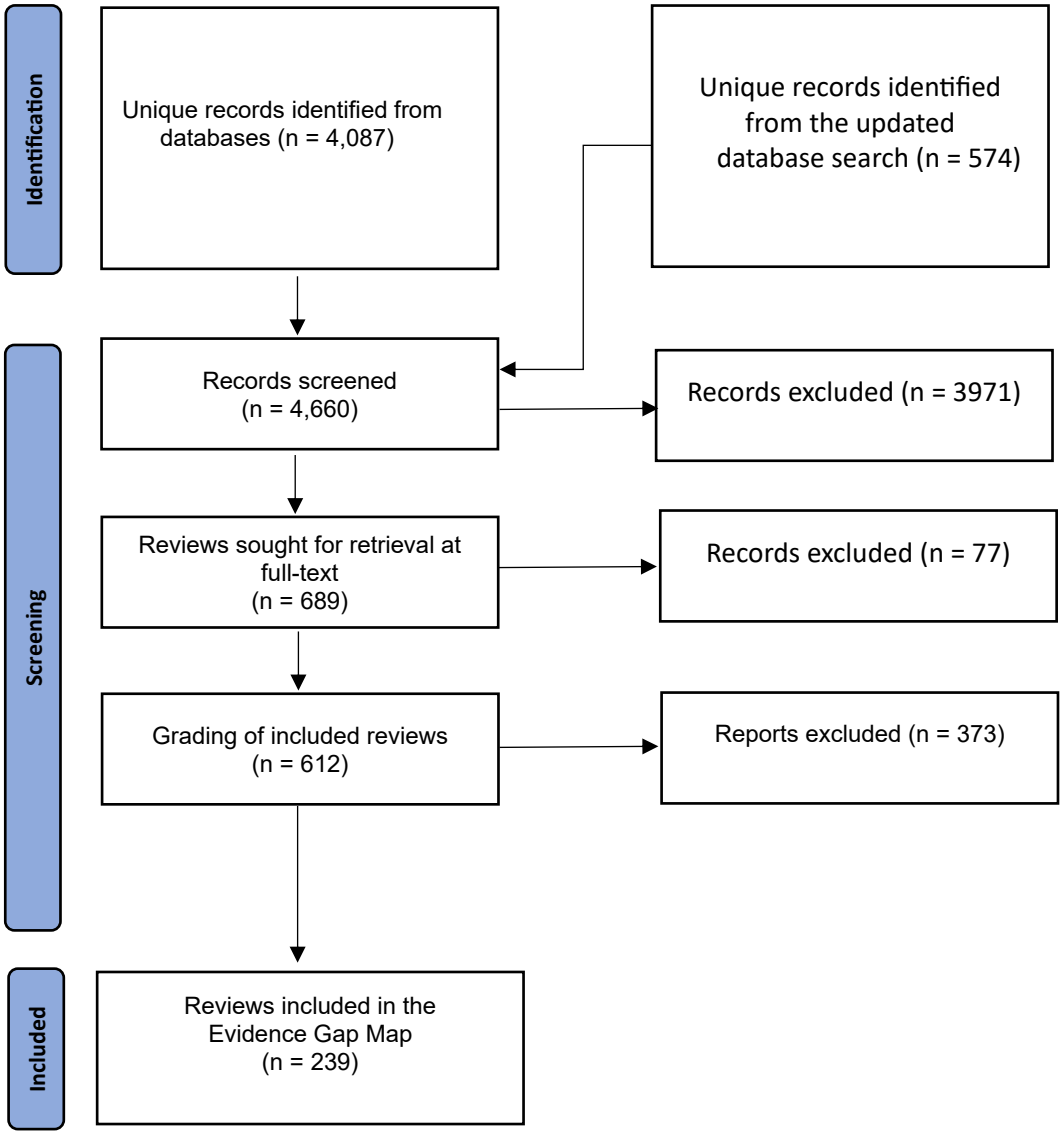

Figure 1 Flow diagram to show results of screening the search results

Exposures

We categorised features of the working environment and associated outcomes under the following headings (Tables 2 and 3):

Table 2: Employment features

Employer attributes
- Government funded sector
- Self employed
- Private sector
- Subcontracted workers
- Size (turnover, geographical influence, number of employees)
- Longevity/stability

Working environment
- Exposure to physical risks
- Exposure to psychologically harmful factors
- Access and support for training
- Engagement with trade unions
- Lack of resources
- Demand-control-support
- Supportive/unsupportive work environments
- Type of premises
- Location of work
- Effort-reward-imbalances
- Digital technologies
- Role ambiguity/conflict

Working relationships
- Bullying or harassment
- Employee engagement
- Leadership models
- Involvement in decision making/autonomy
- Management style
- Discrimination
- Respect, appreciation, acknowledgement

Economic crises
- Pandemic
- Financial crash/recession
- Conflict/war
- Natural disaster

Contract conditions
- Minimum wage/living wage
- Job insecurity
- Low income
- Basis for dismissal
- Terms and conditions (maternity leave, flexible working)
- Employee benefits (pension type/annual leave/health insurance)

Working patterns
- Shift workers
- Night workers
- Long working hours
- Part-time workers
- Remote working
- Flexible employment
- Overtime

Work participation
- Unemployed
- Employed
- Recruitment
- ALMPs (active labour market policies)

Work Life balance
- Work-family conflict
- Social community networks
- Work/life balance
- Work as a community

Work transition
- Return to work
- Retirement
- Progression opportunities

Occupation specific
- Manual and low skilled workers
- Health and social care sector workers
- Mine/underground workers
- Sex workers
- White collar workers
- Informal economy workers

Table 3: Physical, psychological and social wellbeing outcomes

Physical health outcomes

- Accidents
- Cancer
- General health
- Headaches
- Health behaviours
- Health inequalities
- Health service use
- Hearing loss
- Industrial diseases
- Infectious diseases
- Musculoskeletal disorders
- Mortality
- Non-communicable diseases
- Occupational safety
- Obesity
- Physical injury
- Pregnancy outcomes
- Reproductive health
- Sick leave/absence
- Tiredness/fatigue

Social wellbeing

- Anti-social behaviours
- Child stress
- Child poverty
- Family consequences
- Inequalities
- Poverty
- Financial insecurity
- Homelessness
- Requirement for social care
- Work/life balance
- Life satisfaction

Psychological health

- Anxiety
- cognitive functioning
- Depression
- Lack of wellbeing
- Loneliness
- Mental health
- Mental wellbeing
- PTSD
- Quality of life
- Sleep quality
- Stress/psychological distress
- Suicide/self harm
- Substance abuse/dependence
- Use of mental health services

Work-related outcomes

- Absenteeism
- Burnout
- Employee morale
- Demand
- Good work
- Income
- job (in)security
- Job satisfaction
- Lack of employee retention
- Loss of workplace knowledge
- Lower occupational status
- Occupational competence
- Poor work relationships
- Presenteeism
- Reduced innovation
- Unemployment/work loss
- Work participation

Included Reviews

The included studies were published between 2010 – 2021, as per our inclusion criteria. The majority of the studies undertook a narrative synthesis of the included studies (n=163), 43 undertook a meta-analysis, 24 included a meta-regression and 9 undertook a qualitative synthesis. These are shown in Figure 2.

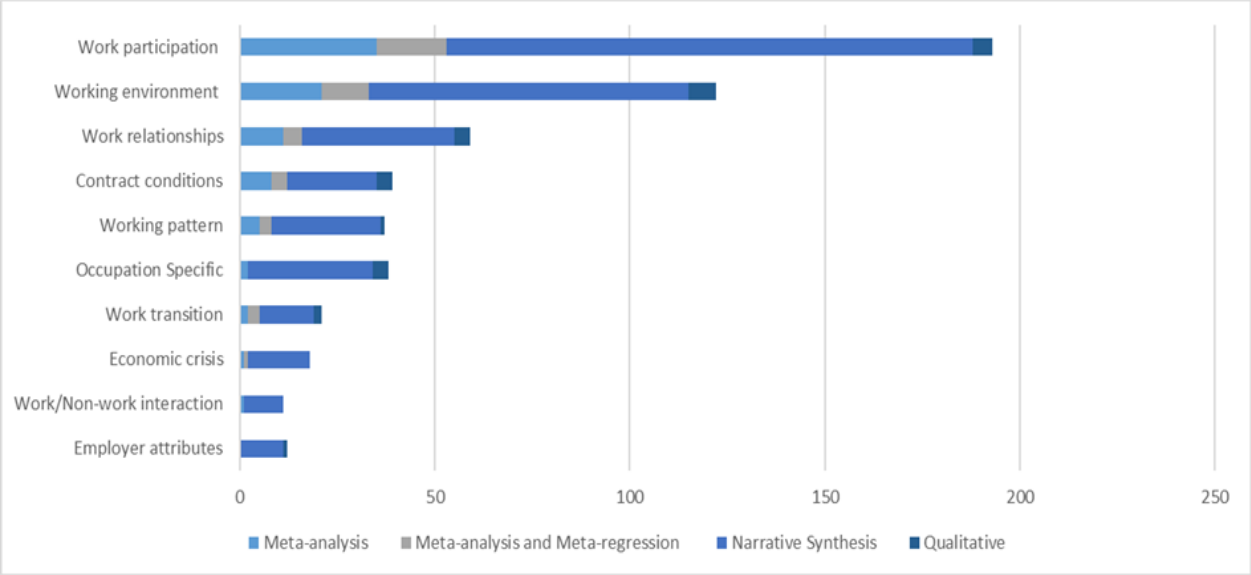

Figure 2: Employment Features explored, and types of synthesis used in the included systematic reviews

The large number of reviews that explored features of 'work participation' reflects that a large majority of the studies focused on employed populations. Within 'work participation' there was less evidence that explored the impact of recruitment (becoming employed after voluntary or involuntary job loss) or policies to promote employment on health outcomes.

Fifty-nine reviews explored the relationship between features of 'working relationships' and their impact on health and social wellbeing. This included the impact of bullying or harassment, leadership models, and the impact of feeling respected and appreciated within the work environment.

A similar number of reviews explored aspects of the 'working environment' (including exposure to psychologically physically damaging environments, and the level of support that is given to staff), 'work transition' (leaving work, retirement). Within 'work transition', very little evidence explored the relationship between progression opportunities and how these might impact health and social wellbeing. Thirty-nine reviews explored the relationship between 'contract conditions' and health and social wellbeing. Most of these explored the impact of job insecurity or precarious work on health and social wellbeing. There was very little review level evidence exploring the conditions covering the basis for dismissal, introducing a minimum wage, and piece rate pay.

Thirty-seven reviews explored the impact of 'working patterns' and their impact on health and social wellbeing. These included shift work, night works and the impact of long-working hours. There was little evidence exploring the impact of unpredictable working patterns, overtime working and part-time working.

A number of reviews (n=38) focused on the association of certain populations of workers and their health and social outcomes, including health care workers, manual and unskilled workers and sex workers.

A smaller number of reviews explored aspects of the type of employer (e.g. government employees, self employment), the impact of an economic crisis and the impact of work on family/social life and how this impacts health and social well being.

Outcomes

The most commonly reported outcomes in the included reviews were psychological health outcomes and these were measured across a range of different outcomes including both the impact of the exposure on positive mental health (mental wellbeing) as well as negative mental health outcomes. Relatively few evidence synthesis explored the relationship between work and measures of social wellbeing including; child poverty, inequalities, homelessness anti-social behaviours, child stress, family consequences, financial insecurity, requirement for social housing, work/life balance and life satisfaction - see Figure 3.

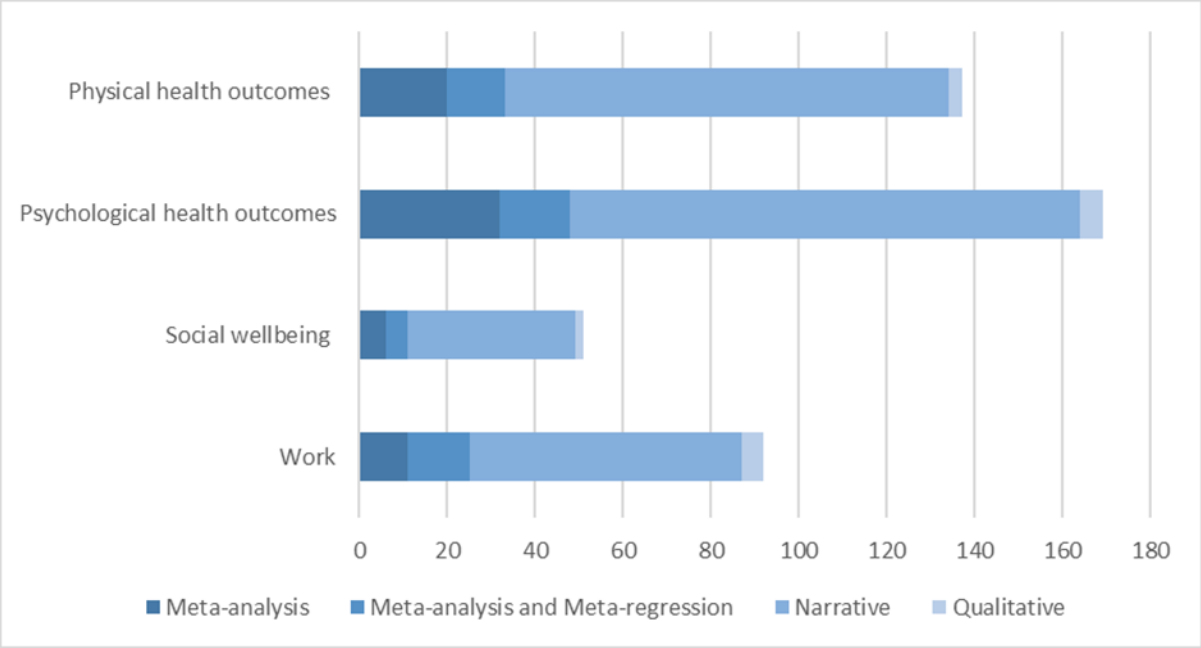

Figure 3: Outcomes measures reported in the included systematic reviews

Physical Health

Reviews included in the map covered 20 different physical health outcomes, by far the most common being ‘general health’ (76 reviews). Other frequently reviewed outcomes were ‘accidents’ (21 reviews), ‘health behaviours’ (26) and ‘NCD’ (non-communicable diseases (29)). ‘Musculoskeletal disorders (seven reviews) and ‘tiredness/fatigue (nine reviews) were among the outcomes that occurred relatively infrequently.

Mental Health

Reviews included in the map covered 15 different mental health outcomes (coded under ‘psychological health). The most common outcome was a general code for ‘mental health’ (80 reviews). ‘Depression’ (51 reviews), ‘mental wellbeing’ (50) and ‘stress/psychological distress’ (53) occurred at similar frequencies. ‘Anxiety’ (20), ‘lack of wellbeing’ (28) and ‘sleep quality’ (28) were also relatively common outcomes. By contrast, ‘loneliness/social relationships’ only appeared as an outcome in two reviews, one dealing with migrant workers (Mucci 2020) and one with employment in later life (Baxter 2021). Given the prominence of

loneliness in current discussions about population health and wellbeing, this may be a gap that could be filled by new review work or future updates of the map.

Social Health

The main social outcomes reported were ‘inequalities’ (37 reviews) and ‘family consequences’ (12). Other outcomes, e.g. ‘work/life balance’ (one review), ‘financial insecurity’ (three) and ‘’child poverty’(one) were rarely reported, again suggesting possible areas for further investigation.

Work related outcomes

Seventeen different work-related outcomes with links to health and/or wellbeing were reported in reviews included in the map. The most frequent outcomes were ‘job satisfaction/dissatisfaction (37 reviews), ‘work participation/exclusion’ (23) and ‘burnout’ (21). Other outcomes reported in ten or more reviews were ‘absenteeism’, ‘employee morale’, ‘job (in)security’ and ‘unemployment/work loss’, the latter two also featuring as exposures in the map.

Employment and Outcomes (Health and Social Wellbeing)

In the following section we describe the frequency with which different features of employment assess different aspects of health and social wellbeing. This is summarised in Figure 4.

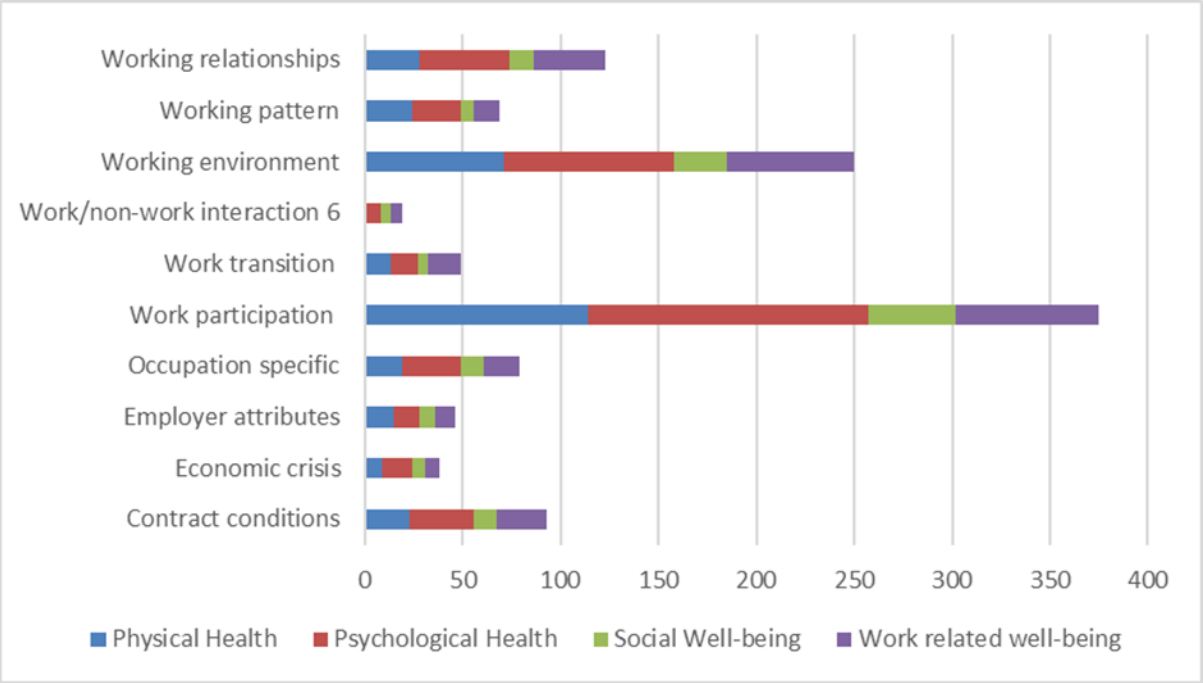

Figure 4: Number of reviews that assessed the effects of different features of employment with health and social wellbeing outcomes

Work participation

We identified more reviews that explored the impact of employment on physical health outcomes, than the effects of unemployment. We identified no reviews that have explored the impact of unemployment on prevalence of cancer, industrial diseases, infectious diseases or musculoskeletal disorders. General health in the employed population was the most commonly reported outcome in the evidence base.

There were also more reviews exploring the relationship between employment and psychological health outcomes (n=167) than unemployment (n=41). There was no review level evidence exploring the impact of unemployment on loneliness, cognitive functioning, PTSD, and quality of life.

Contract conditions

We coded minimum wage, job insecurity, low income, terms and conditions and piece rate pay under the heading of 'contract conditions'. The most commonly explored employment feature was job insecurity or precarious employment (32 reviews). Only one review looked at the impact of a minimum wage policy. Small numbers of reviews looked at low income (n=5), piece rate pay (n=3), terms and conditions such as maternity leave (n-5) and employee benefits (n=5)

Employer attributes

Very few included reviews (n=8) explored the impact of employer attributes on health outcomes. Employer attributes included if the work was government funded, the private sector, self-employed workers or sub-contracted employees. There were no reviews that looked at the size of the organisation or how long it had been in business and how these might impact employee health.

Working environment

We coded 11 different aspects of the work environment (see Table 2). The most commonly measured association was the association between psychologically harmful factors, including for example stress, imbalances between effort and reward and workplace bullying with health and social outcomes.

There were 87 reviews including 59 narrative reviews, 3 qualitative synthesis, 25 meta-analyses and 10 meta-analyses which included a meta-regression examining the association between aspects of the work environment and psychological health.

Seventy reviews (54 narrative reviews, 2 qualitative synthesis and 14 meta analyses with 4 including a meta-regression analysis) that explored the relationship between physical health and the working environment.

Working patterns

The impact of different working patterns (unpredictable working hours, overtime, flexible working, part-time working, long working hours, night working and shirt working) and their

association with physical, psychological, social health was reported in 24, 25 and 7 reviews respectively.

Working relationships

The largest group of reviews coded under working relationships dealt with leadership models (22 reviews) and the related concepts of management style (11), involvement in decision-making/autonomy (15) and employee engagement (8). Exposure to negative working relationships also figured prominently, for example bullying or harassment (15 reviews) and discrimination (12). These exposures were more commonly associated with mental health and wellbeing outcomes than with physical health outcomes. The most common physical health association was with general health.

Work-non-work interaction

This type of exposure was relatively poorly represented in the map, with seven reviews on work-family conflict (including consequences for children) and six on networks (social, community and family). Work-life balance and work as a community were both absent from the map, suggesting a need for review work on these topics.

Occupation specific

Exposures in specific occupational groups were almost entirely restricted to health and care workers (18 reviews) and manual/low-skilled workers (16 reviews). The predominance of these groups probably reflects the databases searched (focusing primarily on health) and our emphasis on health inequalities. Reviews on people exposed to employment-related health risks as a result of their status (e.g. migrants) were also identified but were not coded under this heading.

Economic crises

The period covered by the map includes major crises affecting both employment and health: the 2008 financial crisis and the COVID-19 pandemic. The majority of reviews investigated links between crises and mental health. Of ten reviews coded under ‘Financial crash/recession’ as an exposure, one mainly covered the period before the 2008 crisis (Goldman-Mellor 2010). The remaining reviews were published between 2016 and 2021, focusing on health inequalities (Heggebo 2019) and population health generally (Lange 2017) as well as mental health (Frasquilho 2016; Silva 2018). Overlap in included studies between reviews with similar titles was beyond the scope of our mapping work.

Seven reviews published in 2020 and 2021 dealt with the effects of the COVID-19 pandemic, largely focusing on its impact on mental health in health and care workers and the workforce generally. In addition, one review considered factors associated with psychological wellbeing among occupational groups affected by disasters (Brooks 2017).

Populations

We explored the different populations that were either the focus of the review, or where results for specific population groups were analysed (see Figure 5)

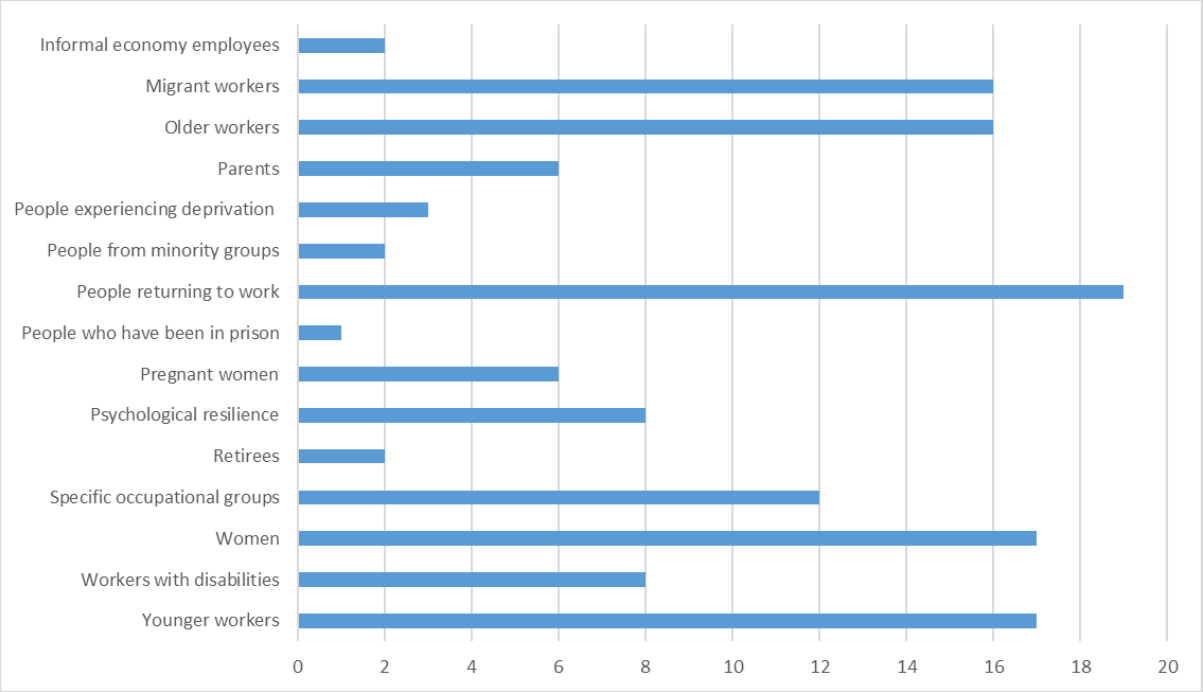

Figure 5: The number of reviews looking at the impact of employment on health outcomes in specific population groups.

Parents

There were 6 reviews that explored the link between employment and health with parents as a focal population, these tended to focus either/both on parental health and adverse childhood health outcomes of their children, with the idea of work-life conflict explicit or implicit. One review focused solely on childhood outcomes and parental work schedules, two focused on lone parents as a subgroup and welfare-to-work impacts, one on epidemiologic risk factors for pediatric obesity, and one on the relationship between work-life conflict and health-related consequences in Europe, and one on adolescent fatherhood.

The European-wide review into consequences of work-life conflict strengthened existing American literature on the link between work-life conflict and health-related outcomes, although there are still questions around directionality, intersectionality and strength (Borgmann, 2019).

One review (Li, 2013) solely focused on childhood health outcomes in the context of parental working schedules and found a significant association between nonstandard work schedules and child developmental outcomes, with this impact being larger in children from low

socioeconomic backgrounds vs higher socioeconomic backgrounds. These include outcomes related to mental health and well-being as well as physical health.

Two reviews explored the link between employment and health in lone parents and their children. Findings suggested that entering the workforce through mandatory welfare-to-work initiatives may lead to poor mental health outcomes for some due to a lack of control and conflict, and do little to address the economic reasons behind exclusion from the labour market with poverty rates in these groups remaining high (Campbell, 2016)(Gibson, 2017). The one review focusing on pediatric obesity found that two unemployed parents were a risk factor vs one or both parents in employment as was being within a low-income household, with authors suggesting a need to focus on upstream factors in addition to modifiable factors. (Chi, 2017)

The review on adolescent fatherhood found that adolescents that became fathers are more likely to come from low-income families and neighbourhoods, with their children being more likely to experience adverse childhood outcomes. The evidence around adolescent fathers' employment was limited (Bamishigbin, 2019).

Pregnant women

Six reviews explored the link between employment and health with four of these having women's reproductive health and/or pregnant women as the focal population. One review looked at pregnant women in the workplace broadly, one focused on shift work broadly and one in particular on pregnancy outcomes and shift work, one on night shift work in particular, and one looked at the predictors of health behaviours in pregnant women.

The (Salihu, 2012) review exploring pregnancy in the workplace revealed that there is inconclusive evidence around environmental risks and exposures and pregnancy, but discrimination was prevalent, and pregnancy could negatively impact a pregnant worker's psychosocial wellbeing in the workplace.

Shift work is reported to increase the risk of adverse pregnancy outcomes. With rotating shifts, fixed-term night shifts, and longer hours all being particular features associated with adverse pregnancy outcomes (Cai, 2019). Pregnant shift-workers had significantly increased chances of outcomes such as preterm delivery, abortion, low birth weight, and small for gestational age infants (Itani 2016) as well as an increased risk of preeclampsia, gestational diabetes and miscarriage (Cai, 2019). The review focused on night work and women's reproductive health revealed inconclusive evidence (Chau, 2014).

One review revealed that income and employment as predictors had a small but significant mean effect size on health behaviours in pregnant women. Publication and risk statuses were found to be moderators of income as a predictor (Cannella, 2016).

Younger workers

Headline: Young workers are a particularly vulnerable and under researched subgroup of the population when it comes to employment and health.

17 reviews out of the 293 had a focus on young workers as a subgroup, as part of their research (5) or as the focal group (8) of interest, with mental health as a central theme across the literature.

When considering the impact of Covid-19, one review focused on the COVID-19 on mental health effects and the workplace and found that young workers' psychological conditions were largely due to concerns around job insecurity, long periods of isolation, and uncertainty of the future (Giorgi, 2020).

Two reviews specifically looked at unemployment and negative mental health outcomes in young people, finding an association between the two (Bartelink, 2020) (Reneflot, 2014). Two reviews focused on precarious employment, (Gray, 2021) found that mental health was worse in employees as a result of precarious employment and in men, mortality was higher, but the evidence was limited in terms of young people. (Vancea, 2017) found that young people in precarious employment or unemployment were vulnerable to negative health outcomes, including mental health and health behaviours. Though our work focuses on exposures rather than interventions, in light of this link, one included review, (Puig-Barrachina, 2019) found that active labour market policies had a positive impact on health outcomes, though in their discussion they do mention that the potential for highly precarious work to counteract these benefits.

When considering aspects of employment that impact health, work-related stressors (high job demand, low job control, high job insecurity, effort-reward imbalance, lack of reward, job boredom, working overtime) were found to have a negative impact on the mental health of young workers, with the stressor of low work support also negatively impacting young men negatively. (Law, 2020). (Sheilds, 2021) review shows that contemporaneous exposure to sexual harassment and poor psychosocial job quality was associated with poorer mental health outcomes and that exposure to low job control was associated with incident depression diagnosis among young workers. A review by (Hanvold, 2018) found that mechanical, psychological and organisational factors contributed to increased injury risk in young workers as well as high job demand leading to negative mental health outcomes, and found young unskilled workers to be particularly vulnerable. No association was found between ICT usage at work and stress across the life course. (Berg-Beckhoff, 2017) One review found that younger workers and being male make you more likely to have shift work tolerance, which is the ability to adapt to shift work with fewer adverse effects (Saksvik, 2011).

One review, (Borsch 2019) explored the outcomes related to a subgroup of the young population, young refugees in Nordic countries, finding that they experienced worse mental health, and educational and employment outcomes, though more work is needed on the relationship between these.

Two reviews explored employment-related outcomes in those with poor health in early life/ the first life stage. (Gondek, 2021) looked at the impacts of poor health across the lifespan on economic and social outcomes, found that poor early mental health was found to be associated with worse employment prospects and earnings, also when compared to siblings and when physical health conditions or self-rated health were accounted for. (Hale, 2015) found for adolescents with poor health, their overall employment outcomes were worse in

adulthood, with much stronger evidence for poor mental health in adolescence vs poor physical health (Hale, 2015).

Older workers

There are 16 reviews coded as older workers, with 8 having older workers as the main focal population, 5 reviews focused on interactions across the lifespan, 2 focusing on migrant populations including the intersection with age, and 1 focused on elder substance abuse.

One of the main considerations in this area is within the context of a global ageing workforce and what can be done to achieve a healthy extended working life, with much of the literature focusing on this. Research into the relationship between older workers within the workplace and health spans many disciplines.

As highlighted in (Pilipiec, 2020) an increased retirement age has increased labour workforce participation by older workers, with an increase in the preferred and expected retirement age, but inconclusive findings when considering health and wellbeing outcomes. A review of the literature (Sewdas, 2020) found that there was no association between early retirement and mortality, and an increase in mortality with on-time retirement but only when not adjusted for age. A review into the effects of exiting the workforce across socioeconomic groups suggests greater positive effects of early/statutory retirement in higher socioeconomic groups vs lower socioeconomic groups (Schaap, 2017). (Baxter, 2021) review of extended working lives and health found they can be beneficial to neutral when considering health and public health, with mixed results for mental health, but this is confounded by gender, working hours, work factors and socioeconomic status. (Gondek, 2018) has found that low self-reported health and mental health are associated with decreases in quality of life, life satisfaction and early retirement.

(Nexo, 2016) showed some evidence of exposure to occupational complexity, high mental demand or job control is associated with a higher level of cognitive function when in mid or later life, but inconclusive evidence around protective causality. One of the issues noted throughout these reviews is the consistency and quality of evidence. (Parker, 2020) illustrates the need for an indicator to measure progress in this field, with only Healthy Working Life Expectancy considering general health in addition to work capacity, though imperfect.

When in the workplace the literature indicates that negative stereotypes around old age have an association with decreased learning and development intentions, job satisfaction, work engagement, performance, and increasing retirement and turnover intentions (Weber, 2019). (Nilsson, 2016) argues for a more holistic view of ageing into four conceptual categories; chronological, biological, mental/social and social ageing, all with target areas for creating a sustainable extending working life. (Nagarajam, 2019) found five workplace factors that prolong the contribution of older workers; health, institutions, HR, human capital and technology tools.

Women

17 reviews were coded with women as a population of interest, the majority having to differing extents explored gender differences. 5 focused on the female population.

5 reviews explored working patterns.

1 review explored the impact of night work on women's reproductive health, and 1 review explored menopausal symptoms in the workplace.

1 review explored the association between domestic violence and association with aspects of women's employment, with all studies finding some form of workplace disruption in women experiencing domestic violence (Showalter, 2016).

1 review explored the association between harmful workplace experience and women's wellbeing at work, finding that more intense yet less frequent harmful experiences and less intense but more frequent harmful experiences had similar negative effects on women's well-being, independent from and as negative as job stressors (Sojo, 2016).

Returning to work

19 reviews were coded with people returning to work as a population, with reviews considering a range of illnesses and injuries in their analysis. 3 reviews considered the relationship between employment status related to this group, such as reemployment and return to work and health. In their reviews of the relationship between employment status and health (Hergenrather, 2015) found that reemployment was associated with better mental and physical health, although crucially this did not consider the type of work. (Rueda, 2012) found beneficial health effects of returning to work.

Some reviews focused on specific types health conditions, 2 reviews focused on outcomes following Intensive Care Unit (ICU) admission, 1 focused on people with HIV, 1 ICU review focused on people with aphasia, 1 review focused on those with somatic conditions and 2 reviews focused on people experiencing poor mental health exclusively.

For ICU survivors' unemployment was found to be common- with job loss, occupation change or a worsened employment status (e.g. less hours) following return to work. (Kamdar, 2020) (Han, 2021) found that time and a countries healthcare policy support are associated with return to work rate, with high-support countries having a higher rate up to 3 years post admission, although from 3-5 year those with lower support have a higher rate.

1 review consulted occupational and broader literature to consider the transition period following unexpected health-related trauma.

7 reviews focused explicitly on the factors that contribute to workplace participation when experiencing a period or ongoing poor health, from a range of perspectives and literature bodies, finding a range of factors that influence the return to work. 1 review focused solely on the role of illness perceptions on work participation.

Summary

This mapping review included 239 published systematic reviews that have explored the relationship between features of employment and unemployment and how these impact physical and or/psychological and/or social wellbeing (including work). The reviews have been coded using a pre-specified framework designed in collaboration with our stakeholders and policy partners. The evidence has been coded so that the type of synthesis used is readily identified. It is clear that, in the majority of the included reviews, a narrative synthesis was undertaken and that only 18% of the included reviews were able to statistically synthesise the results of the included studies. This suggests that much of the available data is heterogeneous and/or too limited to justify a meta-analysis. Some clear gaps are evident within the literature, including a lack of data on how contract conditions, the impact of working for different types of employer, the impact of approaches to work transition affect health and social wellbeing outcomes. Populations where data is limited include those who have served a prison sentence, those working in the informal economy and those from minority groups.

The map is a useful tool for navigating and locating relevant evidence and allows multiple questions to be explored and evidence located. However, it has some significant limitations. Data within cells is not synthesised and we have not presented the pooled results of the included reviews. We also include filters that allow the user to explore potential modifiers of the relationship between the exposure and the outcomes. However, the causal mechanisms are not explored and the relationship between the exposure and the health outcome may be less linear or one directional as it appears in the map.

APPENDIX 1: MEDLINE sample search strategy

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) <1946 to April 16, 2020>

1 (employ* or unemploy* or labo?r market or job* or work*).ti,hw,kw.

2 (health or wellbeing or well-being or life expectancy).ti,kw,hw.

3 1 and 2

4 ((meaningful or good or fair) adj2 (job* or work* condition*)).mp.

5 (inequal* or unequal* or fair or unfair or parity or equity or inequity or precari* or "good work" or "zero hours" or insecur* or (job* adj2 secur*) or unemploy* or automat* or "quality of employment" or (employment adj2 conditions) or "employment relations" or "living wage" or "minimum wage" or employ* rights or worker* rights or representation or trade union* or negotiat* or job satisfaction).mp.

6 (power adj2 (balanc* or imbalanc*)).mp.

7 (disadvantage* or "working conditions").mp.

8 (low wage* or low pay or in-work poverty or in-work poor or working poor).mp.

9 4 or 5 or 6 or 7 or 8

10 3 and 9

11 (review or overview or narrative or synthesis or meta*).m_titl.

12 meta analysis.mp,pt. or review.pt. or search:.tw.

13 11 or 12

Searches of the published literature were completed in April 2020 and covered the following databases: Medline; Econlit; PsycINFO (via Ovid); Social Sciences Citation Index (via Web of Science) and Applied Social Science Index and Abstracts (via ProQuest).

After the removal of duplicates, 4,088 unique references were imported to EndNote and then to EPPI-Reviewer for screening. One additional reference was discovered through reference checking at the full-text screening stage.

APPENDIX 2: List of reviews coded for the map.

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