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DISCUSSION PAPER

# Developing effective mental health workplace interventions in low and middle-income countries:

## Evidence from Jordan's garment industry

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# Developing effective mental health workplace interventions in low and middle-income countries: Evidence from Jordan's garment industry

## Working paper

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## 1. Introduction

In an interconnected world economy, global supply chains play a pivotal role in the production processes of many industries. As a cornerstone of these chains, low and middle-income countries (LMICs) often host labour-intensive segments of production, such as the garment industry. While these industries play a vital role in the economies of many LMICs, the working conditions within them can pose substantial risks to the mental health of millions of workers. In 2010-2011, the potentially devastating mental health consequences of working conditions in global supply chains became a salient issue of international concern following a spate of worker suicides among Chinese industrial workers producing electronics for international brands (Merchant, 2017). More recently, studies conducted in China and Vietnam have found evidence suggesting that factory workers employed in industrial zones in those countries have a far higher prevalence of depressive symptoms than the general population (Do et al, 2020; Ren et al, 2019).

This paper investigates the impact of an innovative program to improve mental well-being among workers in Jordan's export-oriented garment industry. The program under study was conceptualized by Better Work Jordan, a partnership between the International Labour Organization (ILO) and the International Finance Corporation (IFC) which aims to improve working conditions, enhance business competitiveness, and support greater social and economic development in Jordan's garment industry.[3] The workplace mental health program under study was implemented by Better Work Jordan in collaboration with the Jordanian Ministry of Health and over thirty garment factories across the country.

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[3] Better Work Jordan forms part of the global Better Work program, which works to improve working conditions, and compliance with labor rights, as well as the competitiveness of the garment and footwear industry across thirteen countries.

To evaluate the causal impacts of the Better Work Jordan Mental Health Project, we employ the difference-in-differences (DID) method with subgroup balancing propensity scores. To conduct our analysis, we leverage data from a series of national surveys of workers in Jordan's garment industry that have been conducted annually by Better Work Jordan since 2019, and which combine mental health indicators with rich employment and demographic data. We find that the Better Work Jordan mental health interventions had a significant positive impact on the mental well-being of garment factory workers, and that the training component of the interventions in particular appears to have been a major driver of the positive effects observed. This training component involves mental health support training to workplace healthcare professionals and managers which provides them with the skills, knowledge and tools to proactively identify and assist workers in need of mental health support.

This paper is structured as follows: section 2 provides an overview of mental health risks in global supply chain factories. Section 3 summarizes the extant research that has aimed to identify evidence-based interventions for improving workplace mental health. Section 4 provides an overview of mental health outcomes in Jordan's export-oriented garment industry and a description of the Better Work Jordan Mental Health Project. Section 5 details the data and methods employed in our analysis. Section 6 presents our main results. Finally, section 7 concludes with a discussion of our results and suggestions for future research in this area.

## 2. Mental health risks in global supply chain factories

An extensive body of research has shown that employment has the potential to provide mental health benefits (see Modini et al, 2016, for a review); however, it is also recognized that work can pose substantial risks to mental well-being. It is well established that negative working environments are associated with greater risk of poor mental health outcomes such as depression, anxiety and work-related stress (Harvey et al, 2017; van der Molen et al, 2020). In particular, research has identified a number of psychosocial risk factors for poor mental health including high job demands, low job control, high effort-reward imbalance, low organizational justice and low social support in the workplace (Harvey et al, 2017; van der Molen et al, 2020).

Production-floor jobs in global supply chain factories often exhibit two of the key characteristics associated with negative mental health outcomes: high demands (workload/time pressure) and low control (minimal worker decision-making). The combination of these two factors has been found to create a 'high job strain' situation which is associated with a particularly high risk of mental illness and reduced well-being in the workplace (Butterworth et al, 2011; Dalgard et al, 2009; Hausser et al, 2010; Madsen et al, 2017). In 2010-2011, the potentially devastating mental health consequences of working conditions in global supply chains became a salient issue of international concern following a spate of worker suicides among Chinese industrial workers producing electronics for international brands (Merchant, 2017). More recently, studies conducted in China and Vietnam have found evidence suggesting that factory workers employed in industrial zones in those countries have a far higher prevalence of depressive symptoms than the general population (Do et al, 2020; Ren et al, 2019).

As awareness of the mental health challenges faced by production workers in global supply chains has increased, various stakeholders have taken an interest in supporting research to improve understanding of these challenges, including governments and international brands sourcing from global supply chain factories (e.g. UK Research and Innovation, 2022; Weziak-Bialowolska et al, 2017). The current study aims to contribute to this emerging literature by investigating the effects of several interventions implemented in Jordan's export-oriented garment industry to improve the mental well-being of production workers.

## 3. Toward evidence-based mental health workplace interventions

In recent years, there has been growing interest in the development of evidence-based interventions to improve mental health in the workplace. In 2021, the Wellcome Trust published a flagship report examining the evidence behind several promising approaches for supporting workplace mental health (Newman et al, 2021). In 2022, the World Health Organization (WHO) published its first-ever global guidelines on mental health at work (WHO, 2022a). These guidelines were published alongside an accompanying joint WHO/ILO Policy Brief on Mental Health at Work (ILO / WHO, 2022) and provide recommendations on interventions to better prevent, protect, promote and support the mental health of workers which were developed according to a comprehensive review of the latest available research evidence.

The WHO guidelines recommend three broad categories of evidence-based interventions for improving workers' mental health outcomes:

- **Manager training for mental health.** Training for managers to support their workers' mental health. This broad category includes two types of manager training. The first is related to *mental health support* for workers and is designed to enable managers to identify and respond to workers requiring such support. This type of training may comprise components such as training on mental health and psychosocial risks, early identification and response to emotional distress (including referral to other sources of support) and communication and active listening skills. The second involves *human resource management* training aimed at improving managers' capacity to design a work environment and organization which promotes mental health and well-being.
- **Training for workers in mental health literacy and awareness.** Training for workers in mental health literacy and awareness which aims to improve trainees' mental health-related knowledge and attitudes at work, including training to counter stigmatizing attitudes.
- **Individual interventions delivered directly to workers.** This includes three types of interventions. The first is universally delivered psychosocial interventions that aim to build workers' skills in stress management. The second is individual psychosocial interventions targeted specifically at workers with emotional distress. The third involves opportunities for leisure-based physical activity and physical exercise.

For the purposes of this study, we confine attention to the following two categories of workplace mental health interventions: 1) manager training for mental health, and 2) individual

psychosocial interventions targeted specifically at workers with emotional distress. The other categories of intervention described above fall outside the scope of this study.

Importantly, while the WHO guidelines are based on the latest evidence available, the evidence base in this field remains weak. Regarding the two categories of intervention under investigation here, the WHO guidelines describe the certainty of evidence for their effectiveness as ranging from very low to moderate.[4] With regard to evidence on the effectiveness of manager training for mental health, the WHO describes this as being of moderate certainty overall. This is based on the findings of a pre-existing meta-analysis which was updated for the purpose of formulating the WHO guidelines (WHO, 2022a: 27). More specifically, high-certainty evidence found *mental health support* training interventions to have a very small significant effect on supervisee-reported mental health outcomes. In addition, low-certainty evidence from one study found that mental health support training had a substantial positive impact on workers' subsequent help-seeking behaviour. Evidence for *human resource management* training was extracted from a Cochrane review. Very low-certainty evidence from individual trials found that such training had small positive effects on workers' organizational commitment, work-related motivation and engagement. Importantly, however, most effects (from three out of five studies) were not statistically significant. Moreover, no effects were observed on workers' job satisfaction, turnover intention or team effectiveness. With regard to evidence on the effectiveness of individual psychosocial interventions for workers with emotional distress, the WHO describes this as being of very low certainty overall. This assessment is based on findings from five systematic reviews (WHO, 2022a: 27).

Given the absence of a strong body of evidence on the effectiveness of many workplace mental health interventions, it is unsurprising that the ILO and WHO have highlighted the importance of further research in this field. Seven priority cross-cutting actions are proposed by the ILO and WHO to improve mental health at work, among which is "strengthening the evidence base on the prevalence and impact of work-related risks and effectiveness of interventions" (ILO/ WHO, 2022: 17). In particular, the WHO has highlighted a critical need to increase the volume and quality of evidence for effectiveness in under-researched populations including those in LMICs (WHO, 2022a). The lack of evidence on the effectiveness of workplace mental health interventions in LMICs has also been highlighted by the Wellcome Trust (2022) and academic researchers (Gray et al, 2019). Indeed, a recent analysis of inequities in mental health research funding shows that less than five percent of this funding goes to LMICs (Woelbert et al, 2020). This study contributes to filling the research gap on the effectiveness of mental health workplace interventions in LMICs by presenting evidence from

[4] The guidelines employ the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) system for assessing the certainty of a body of quantitative evidence. GRADE is a transparent and widely used framework for developing and presenting summaries of clinical evidence that provides a systematic approach for making clinical practice recommendations. According to this framework, "very low" certainty of evidence is defined as "very little confidence on the estimate of the effect" while "moderate" certainty of evidence is defined as "… [moderate confidence] in the estimate of effect. The true effect is likely to be close to the estimate of effect, but there is a possibility that it is substantially different. Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate." Further details on the use of the GRADE system in the WHO guidelines on mental health at work are presented in the publication (WHO, 2022a: 114-115).

the case of Jordan's garment industry. Jordan is a lower-middle income country and this industry largely employs workers from the lower-middle income countries of Bangladesh, India, Myanmar and Nepal.

## 4. Mental health in Jordan's garment industry

This study investigates the effects of several interventions to improve the mental well-being of production workers in Jordan's export-oriented garment industry. This is a sector primarily driven by large factories that export to the United States under the United States-Jordan Free Trade Agreement (USJFTA) which provides Jordan with preferential duty and quota-free access to the United States market. In 2022, Jordan's exporting garment industry employed around 77,800 workers, representing around 36 percent of total manufacturing employment in the country.[5] Three quarters of garment workers in Jordan are migrants (Better Work Jordan, 2023). Bangladeshi workers are the largest group (over 50 per cent of migrant workers) with smaller numbers of workers from India, Sri Lanka, Nepal, Myanmar and Syria. Jordanian workers make up the remaining quarter of the workforce (Better Work Jordan, 2023). The majority of workers in the sector are women, comprising nearly 75 per cent of the production workforce, although the majority of management positions are held by men (Better Work Jordan, 2023).

Periodic surveys conducted by the Better Work Jordan programme provide a comprehensive picture of mental well-being among production workers in Jordan's export-oriented garment industry. These representative surveys of garment workers in Jordan's export-oriented garment industry were initially fielded in both June and December 2019, and were fielded annually in July thereafter (2020-2022). The latest data in this series is a survey of 1,567 production workers[6] carried out in 2022 and suggests that these workers face significant mental well-being challenges. Asked whether they agreed with the statement "The stress associated with my job is acceptable," a majority of workers disagreed (31 percent reported that they strongly disagreed, and 20 percent reported that they somewhat disagreed).

Survey respondents' mental well-being was also measured using the Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS), a survey scale relating to individuals' self-reported emotional and cognitive state which is well-established as a valid measure of mental well-being (Anthony et al, 2022; Fat et al, 2016; Haver et al, 2015; Koushede et al, 2019; Melendez-Torres et al, 2019; Shah et al, 2021; Taggart et al, 2013). SWEMWBS has been benchmarked against well-validated measures of depression and it is possible to suggest scores equivalent to cut points for possible and probable clinical disease, with a SWEMWBS score of less than 18 being indicative of probable clinical depression and a score of 18-20 being indicative of possible mild depression (Warwick Medical School, 2021). The survey findings suggest it is probable that 30 percent of export-oriented garment workers in Jordan are clinically depressed, with a further 14 percent possibly suffering from mild depression. This

[5] Authors' estimate derived from Better Work Jordan (2023) figures for Jordan garment industry employment in 2022 and ILOSTAT database figures for total manufacturing employment in Jordan during 2021 (the latest year for which official figures are available).

[6] Factory floor supervisors are excluded from the sample.

is broadly consistent with findings from surveys of industrial workers in Vietnam and China. In Vietnam, a recent survey of factory workers in industrial zones across four provinces found that 30.5 percent and 33.6 percent had experienced positive depressive symptoms and suicidal ideation over the last two weeks, respectively (Do et al, 2020). Similarly, a survey of migrant assembly-line workers randomly sampled from two footwear factories in Shenzhen, China found 31.7 percent of them to be clinically depressed (Ren et al, 2019). In contrast, it is estimated that only five percent of the global population aged over 20 years suffers from either mild or major depressive disorder, with this figure rising to six percent among women (WHO, 2022b: p. 41).

To address these issues, the Better Work Jordan programme has established a project which seeks to improve mental health outcomes among workers in Jordan's export-oriented garment industry. Launched in March 2021, the project focuses on building worker resilience against mental health risks, including through enhancing access to support at the factory level, promoting help-seeking behaviour among workers and facilitating referral to specialized mental health organizations. The project has implemented several national sector-wide initiatives, such as a mental health awareness campaign involving the production of video communication materials, public art in industrial zones and training for Jordanian government labour inspectors on mental health issues. However, the current study confines attention to assessing the impact of the project's factory-level interventions over the period 2021-2022. These were:

1. **Mental Health Focal Points.** This involved the appointment of a factory staff member (typically a factory Counsellor, Compliance Officer, Human Resources Officer or general health professionals) responsible for:
    a. Working in collaboration with Better Work Jordan to identify mental health and psychosocial support services available to workers employed at the factory and to facilitate safe and confidential referrals for workers who need them.
    b. Supporting the development and implementation of a mental health policy for the factory. This included the creation of a cross-factory task force comprised of all mental health focal points to develop a model workplace mental health policy.
    c. Coordinating mental health activities at the factory. This includes coordinating the training activities described in point 3 below and usually also involves conducting mental health awareness sessions with workers and management.

2. **Counsellors.** This involved the appointment of a counsellor at the factory to provide focused non-specialized mental health counselling services to workers (these services correspond to interventions at the second layer of the intervention pyramid developed by the United Nations Inter-Agency Standing Committee on Mental Health and Psychosocial Support). All counsellors are required to hold at least a bachelor's degree in health sciences, psychology, social sciences, social work or a related field and have some professional knowledge of self-care and staff care. All counsellors also received clinical supervision from a clinical psychologist and were required to keep detailed case records which were submitted to Better Work Jordan on a periodic basis.

3. **Training.** This involved the delivery of the following training programmes to factory staff responsible for worker welfare issues:

    a. **World Health Organization (WHO) Mental Health Gap Action Programme (mhGAP).** A four-to-five-day training on identifying and managing basic mental, neurological, and substance use disorders at the primary care level based on the WHO's mhGAP Intervention Guide, delivered in collaboration with the Jordanian Ministry of Health. The training programme was delivered to general health professionals (doctors and nurses) employed in garment factory medical clinics. It involved a monthly follow up visit by a professional psychiatrist for each trainee.
    b. **Psychological First Aid (PFA).** A one-day PFA training on how to respond to individuals experiencing psychological distress. This was delivered to factory staff including general health professionals (doctors and nurses), welfare officers, occupational safety and health officers, labour-management committee members and worker dormitory supervisors.
    c. **Mental well-being training.** A four-day training on applying fundamental counselling techniques when working with garment workers, recognizing vulnerable individuals who require psychological help, implementing preventive measures for mental health issues and learning how to manage mental health issues such as panic attacks, suicidal ideation and suicide attempts. This was delivered to mental health focal points, counsellors, and general health professionals (doctors and nurses) employed in garment factories.

Garment factories participating in the project did not necessarily participate in all interventions, but rather opted in to various interventions according to a combination of management preferences and Better Work Jordan's assessment of the factory's ability to implement the intervention. This results in three treatment conditions, as presented in Table 1.

**Table 1 – Description of treatment conditions**

| Treatment condition | Description | WHO categorization |
|---|---|---|
| Training | Training intervention only. Not all factories who participated in the training activities received all training programmes during the period under study. Factories that received any of the training programmes described above are included in the treatment group. | • Mental health support training |
| MHFP + Training | Mental health focal point intervention and at least one training programme intervention. | • Individual psychosocial interventions for workers in distress<br>• Mental health support training |

| | | |
|---|---|---|
| | | • HR management training[7] |
| All | All interventions. This refers to factories that received the counsellor intervention, mental health focal point intervention and at least one training intervention. | • Individual psychosocial interventions for workers in distress<br>• Mental health support training<br>• HR management training[7] |

Table 2, below, presents the number of production units and survey respondents receiving each of the treatment conditions alongside those in the study control group, who did not receive any treatment.

**Table 2 – Exposure to treatment conditions by production units and survey respondents**

| Treatment condition | Production units | Survey respondents |
|---|---|---|
| Training | 11 | 387 |
| MHFP + Training | 8 | 359 |
| All | 20 | 1,108 |
| Control | 50 | 892 |
| **TOTAL** | **89** | **2,746** |

# 5. Data and methods

## 5.1 Data

To investigate the impact of the Better Work Jordan Mental Health Project interventions, we draw on two sources of data. First, surveys of workers in Jordan's garment industry conducted by Better Work Jordan. Second, administrative records on the rollout of Better Work Jordan factory-level mental health interventions.

Better Work Jordan worker surveys are representative surveys of workers in Jordan's export-oriented garment industry which have been fielded periodically since June 2019 (see Table 3 for details). The surveys provide rich repeated cross-sectional data on workers in Jordan's export-oriented garment industry, including data on respondents' working conditions, mental health status and a host of demographic and attitudinal variables. The surveys are self-administered through personal cell phones or tablets. They have been developed in Arabic, Bengali, Hindi, Sinhala and Nepali versions, and respondents are provided with a version in the language of their home country. Throughout the administration of the survey, workers are given the option to listen to audio recordings of survey questions as they are displayed on the

[7] This refers to the training of mental health focal points in the development of a workplace mental health policy through participation in the cross-factory taskforce.

screen. These recordings are intended to assist low-literacy workers with comprehension of the survey questions. All migrant worker respondents complete the survey outside of the factory on their day off in locations such as a workers' recreational centre, trade union office or worker dormitory. Jordanian respondents are surveyed on-site during the workweek.

**Table 3 – Better Work Jordan Workers' Surveys[8]**

| Wave | Fielded | Sample size (total) | Sample size (female) | Sample size (male) |
|---|---|---|---|---|
| 1 | June 2019 | 1,703 | 1,216 | 487 |
| 2 | Dec 2019 | 1,654 | 1,220 | 434 |
| 3 | July 2020 | 1,754 | 1,292 | 462 |
| 4 | July 2021 | 1,454 | 1,081 | 366 |
| 5 | July 2022 | 1,567 | 1,166 | 393 |

Administrative records on the rollout of Better Work Jordan mental health interventions were used to identify the treatment status of factory production units. The data provided information on which interventions (if any) had been implemented in each production unit and the date each intervention was introduced. This allowed us to allocate respondents to a treatment or control condition.

### 6.3 Dependent variables

Our outcome of interest is worker mental well-being. This is operationalized with two dependent variables. The first of these is the Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS), a 7-item survey scale comprised of positively worded statements related to functioning and feeling aspects of mental well-being. Survey respondents are asked to rate how each statement applies to their personal experience on a scale of five response categories ranging from 'none of the time' to 'all of the time'. The resulting score is well-established as a valid measure of mental well-being (Anthony et al, 2022; Fat et al, 2016; Haver et al, 2015; Koushede et al, 2019; Melendez-Torres et al, 2019; Shah et al, 2021; Taggart et al, 2013). A SWEMWBS score can range from 7-35, with higher values representing higher levels of mental well-being. SWEMWBS has been benchmarked against well-validated measures of depression and it is possible to suggest scores equivalent to cut points for possible and probable clinical disease, with a SWEMWBS score of less than 18 being indicative of probable clinical depression and a score of 18-20 being indicative of possible mild depression (Warwick Medical School, 2021). It should be noted that translations of SWEMWBS are not available for all worker languages. Thus, this scale was only administered to Bangladeshi, Indian, Jordanian and Syrian workers.

We also consider an additional dependent variable: self-reported job stress. The inclusion of this outcome measure provides two advantages. First, it allows us to include data for Nepali and Sri Lankan workers (to whom the SWEMWBS was not administered). Second, it provides

[8] For waves 4 and 5, data on workers' gender is missing for a very small number of respondents. For this reason, male and female respondents do not add up to the total number of respondents.

a more multidimensional and holistic perspective on the mental health effects of the interventions under study. Importantly, existing research on mental health at work suggests that the workplace risk factors associated with the development of stress-related mental disorders differ from those associated with other mental disorders (Harvey et al, 2017; van der Molen et al, 2020). Thus, the effects of these interventions on job stress merit a distinct study. Respondents were asked “Do you agree or disagree with the following statement? The stress associated with my job is acceptable.” This is coded as 0–4, with higher values indicating less job stress (i.e. higher mental well-being). Importantly, this outcome variable measures a different aspect of mental well-being than the SWEMWBS, as indicated by the weak correlation between the two variables ($r$ = 0.15).

Finally, we consider a third dependent variable which does not measure the outcome of interest, but rather is used to test a key causal mechanism hypothesized for the mental health intervention programmes: an increase in help-seeking behaviour. Respondents were asked “If you were facing a lot of stress or issues in your personal life, who would you talk to for support? Choose all that apply.” Response categories were “No one”, “My friends or family”, “My dorm supervisor”, “A social worker” and “Other”. This is coded as a binary variable in which respondents who answered “No one” are coded as 0 and the remaining respondents are coded as 1.

### 6.4 Analysis

We employ the difference-in-differences (DID) method with subgroup balancing propensity scores (Stuart et al, 2014; Dong et al, 2020) to evaluate the causal impacts of the mental health interventions on the three dependent variables. The DID estimators compare the change in outcomes over the course of the mental health interventions between workers in the treatment group (workers in production units which implemented the interventions) and the control group (workers in production units which did not implement the interventions), then take the difference between these two differences. DID estimation is commonly used for evaluating nonrandomized interventions. This is because this approach removes biases in post-intervention comparisons between the treatment and control groups that may result from inherent differences between these groups, in addition to biases from comparisons over time in the treatment group resulting from trends due to other causes of the outcome. In the case under study, assignment to treatment was not random as interventions were provided to factories conditional on their capacity to implement the intervention and on an opt-in basis. Wave 4 of the Better Work Jordan worker surveys (fielded in July 2021) provides data for the pre-intervention time period and Wave 5 (fielded in July 2022) provides data for the post-intervention time period.

DID estimation assumes that in the absence of treatment, the change in outcome between pre- and post-intervention periods for treated units would be similar to that for control units (Abadie, 2005). We test the validity of this parallel trends assumption using data from Waves 1-4 of the Better Work Jordan worker surveys, all of which were fielded before implementation of the mental health interventions. This involves conducting placebo tests and event-studies during the pre-treatment period for the three dependent variables. The results of this analysis (presented in Appendix 1) demonstrate that the parallel trends assumption is not consistently

met. Moreover, the data used in this study is cross-sectional rather than longitudinal panel data. Thus, we use subgroup balancing propensity scores which weight the four groups (defined by time and intervention status) to be balanced on a set of covariates associated with workers' mental well-being outcomes. This results in comparable treatment and control groups across both treatment periods.

We selected the covariates for computing the propensity scores using an iterative process that combined theoretically informed and data-driven approaches. The Better Work Jordan worker surveys provide rich data on 21 non-attitudinal variables describing the characteristics and working conditions of workers in Jordan's export-oriented garment industry. However, including all these covariates in the analysis is not advisable due to the likelihood of significant deterioration in matching quality, the risk of model overfitting, and an increased likelihood of multicollinearity. It is therefore necessary to select a smaller subset of covariates that is most relevant for our analysis.

Relying solely on the existing scholarly literature to select covariates would likely be inadequate due to the paucity of high-quality, quantitative research on the determinants of mental health among industrial workers in LMICs. To address this challenge, we therefore adopt this hybrid approach which leverages the rich set of covariates available from the Better Work Jordan worker survey data. This iterative process involved four steps:

1. Initially, data from the pre-intervention period was used to regress each dependent variable on a set of covariates identified through a review of the existing literature. These conventional determinants of mental health among industrial workers in LMICs are: gender, age, age squared, migrant status, marital status, parenthood, the interaction effect between gender and parenthood, and new worker status (defined as employment at the factory for less than six months). Notably, new worker status was included despite its absence in the extant literature because it has been identified by Better Work Jordan as a key predictor of mental health outcomes among garment workers in Jordan. For each dependent variable, the covariates found to be statistically significant were retained.

2. To complement the theoretically informed covariates, we employed the Least Absolute Shrinkage and Selection Operator (Lasso) method for each dependent variable. This allowed us to systematically and objectively identify relevant covariates based on the empirical data. In conducting this analysis, we excluded attitudinal covariates from the Better Work Jordan worker survey dataset to avoid post-treatment bias.

3. Following the independent identification of theoretically and empirically informed covariates, we integrated these sets through additional regression analyses. We regressed each dependent variable on the covariates retained in the first step and the Lasso-selected controls from the second step. We retained the Lasso-selected controls that remained statistically significant in the model.

4. As a final step, we validated the model by regressing each of the dependent variables on the theoretically informed covariates retained in the first step and the Lasso-selected controls retained in the third step. This served to confirm the robustness of

our model and to ensure that all retained variables were statistically significant predictors of the dependent variable. Any covariate that lost its statistical significance in this validation step was removed from the model.

The final list of covariates used to compute the propensity scores for each dependent variable is presented in Appendix 2. The subgroup balancing propensity scores were computed using the R package WeightIt (Greifer, 2023a). Summaries of the weights and the corresponding balance statistics are presented in Appendix 3.

Additionally, we include controls for the above-mentioned variables in the weighted regression models. Including covariates in the outcome model after weighting has several purposes: it can increase precision in the effect estimate, reduce bias due to residual imbalance, and make the effect estimate doubly robust (i.e. the estimate is consistent if either the weighting reduces sufficient imbalance in the covariates or if the outcome model is correct) (Greifer, 2023b).

## 6. Results

This section presents the findings of our analysis. We present the estimated average treatment effects (ATEs) of the Better Work Jordan mental health interventions on workers' SWEMWBS score and self-reported job stress. Our findings, presented in Table 4, reveal that the interventions had a significant impact on worker mental well-being.

**Table 4 – Effect of Better Work Jordan Mental Health Interventions on Workers' Mental Health**

| | SWEMWBS (OLS regression model) | | | Job stress (OLS regression model) | | | Willingness to seek help (Logistic regression model) | | |
|---|---|---|---|---|---|---|---|---|---|
| | **All treatments** | **Training** | **MHFP + Training** | **All treatments** | **Training** | **MHFP + Training** | **All treatments** | **Training** | **MHFP + Training** |
| **Treatment group**[9] | -1.513***<br>(0.480) | -0.603<br>(0.618) | -1.216*<br>(0.622) | -0.316***<br>(0.121) | -0.244*<br>(0.133) | -0.472***<br>(0.139) | 0.037<br>(0.033) | 0.006<br>(0.039) | -0.020<br>(0.042) |
| **Post-treatment period**[10] | -1.213***<br>(0.411) | -1.242***<br>(0.406) | -1.056***<br>(0.402) | -0.023<br>(0.120) | -0.082<br>(0.101) | -0.093<br>(0.103) | -0.006<br>(0.033) | -0.015<br>(0.031) | -0.015<br>(0.031) |
| **Treatment group* Post-treatment period**[11] | 1.089*<br>(0.600) | 1.067<br>(0.827) | 0.933<br>(0.845) | 0.167<br>(0.166) | 0.400**<br>(0.197) | 0.263<br>(0.200) | -0.019<br>(0.045) | 0.066<br>(0.058) | 0.048<br>(0.060) |
| **Subgroup balancing propensity scores** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Controls** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Robust standard errors clustered at the factory level in parentheses.
*p<0.1; **p<0.05; ***p<0.01

[9] This coefficient indicates the modelled estimate for the average difference in the dependent variable between the treatment and control group, after accounting for weights and covariates.

[10] This coefficient indicates the modelled estimate for the average difference in the dependent variable between the pre-treatment and post-treatment groups, after accounting for weights and covariates. In other words, it represents the average change over time in the dependent variable during the period under study.

[11] This coefficient represents the interaction term between intervention status and time status, after accounting for weights and covariates. This represents the difference-in-differences estimate, i.e. the average treatment effect.

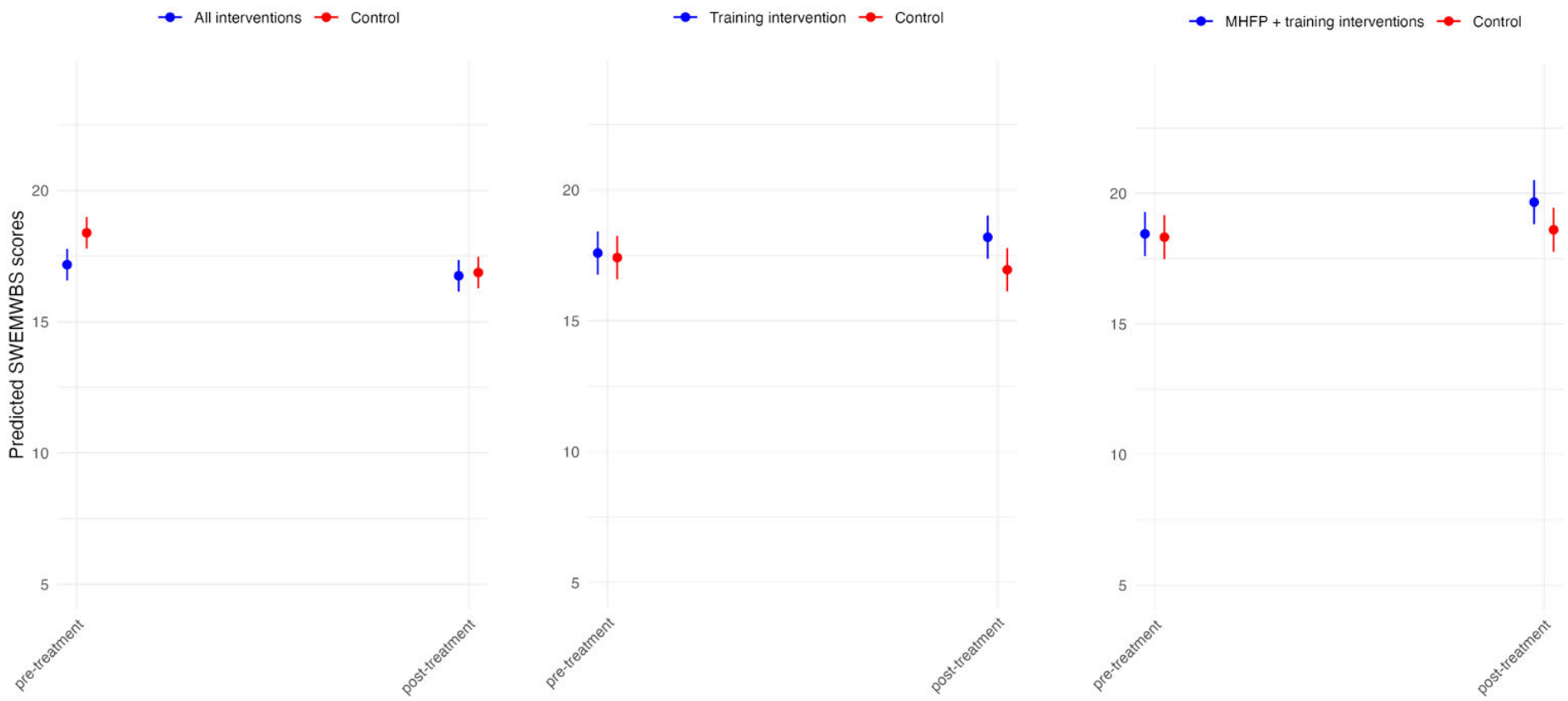
### Impact on SWEMWBS scores

In factories that implemented all of the Better Work Jordan mental health interventions, we observe a statistically significant improvement in workers' mental well-being compared to the control group, as measured by the SWEMWBS. As presented in Figure 1, the estimated ATE is 1.089 points. To contextualize this effect size, we present summary SWEMWBS statistics for Wave 5 of the Better Work Jordan Workers' Survey (fielded in July 2022) in Table 5. This table shows that among workers with lower levels of mental wellbeing, this ATE is broadly comparable to moving a worker up by one decile in terms of her/his SWEMWBS score. In contrast, for factories that implemented the training-only or the MHFP + training interventions, the estimated ATEs on SWEMWBS scores are not statistically significant, though they are in the expected positive direction (see Figure 1).

**Table 5 – Summary SWEMWBS Statistics for Wave 5 of the Better Work Jordan Workers' Survey (July 2022)**

| | **SWEMWBS** | **Δ SWEMWBS compared to preceding decile** |
|---|---|---|
| **Minimum value** | **7.00** | Not applicable |
| **10$^{th}$ percentile** | 15.32 | Not applicable |
| **20$^{th}$ percentile** | 16.88 | 1.56 |
| **30$^{th}$ percentile** | 17.98 | 1.10 |
| **40$^{th}$ percentile** | 19.25 | 1.27 |
| **50$^{th}$ percentile** | **19.98** | 0.73 |
| **60$^{th}$ percentile** | 21.54 | 1.56 |
| **70$^{th}$ percentile** | 23.21 | 1.67 |
| **80$^{th}$ percentile** | 25.03 | 1.82 |
| **90$^{th}$ percentile** | 28.13 | 3.10 |
| **Maximum value** | **35.00** | Not applicable |

**Figure 1 – Predicted SWEMWBS values for workers receiving Better Work Jordan mental health interventions and workers in control group**



**Impact on self-reported job stress**

Measuring worker mental well-being using the self-reported job stress variable yields somewhat different results. This is unsurprising given the weak correlation between this variable and the SWEMWBS variable. The results show a statistically significant improvement in workers' self-reported job stress for workers in factories who received the training-only intervention compared to workers in the control group, with an estimated ATE of 0.400 points on the self-reported job stress scale. However, in factories that implemented either all of the Better Work Jordan mental health interventions or the MHFP + training interventions, the estimated ATEs on job stress are not statistically significant, though they are in the expected positive direction.

**Impact on willingness to seek help**

Finally, we test the plausibility of worker willingness to seek help as a causal mechanism driving the effects of the Better Work Jordan mental health interventions. The results show that willingness to seek help did not improve among workers in factories that implemented any of the Better Work Jordan mental health interventions compared to workers in the control group.

# 7. Discussion and conclusions

Overall, our findings reveal a significant impact of the Better Work Jordan mental health interventions on the mental well-being of garment factory workers. In factories that implemented all components of the Better Work Jordan mental health interventions, we observe improvement in workers' mental well-being compared to workers in the control group, as measured by the SWEMWBS. Yet we identify no significant change in self-reported job stress levels. Interestingly, this finding contrasts with the results from the training-only intervention group, which exhibited an improvement in self-reported job stress levels but no corresponding improvement in overall well-being according to SWEMWBS scores.

Given that factories which implemented all components of the mental health interventions also implemented the training intervention, the absence of an improvement in the job stress outcome among this group may initially seem puzzling. However, several considerations can provide clarity to this finding, as discussed below.

First, it should be noted that a relative improvement is observed in the job stress outcome among workers in factories that implemented all of the interventions, however, it does not attain conventional levels of statistical significance. Similarly, the ATE coefficients for the MHFP + training intervention group are in the expected positive direction for both the self-reported job stress and SWEMWBS outcomes, but they fall short of statistical significance at conventional levels.

Second, factories did not implement the training intervention in a standardized manner. Some factories participated in all of the Better Work Jordan mental health training programs while others did not. The number of trainees who participated and their organizational role also

varied from one factory to another. Here, it is important to note that the Better Work Jordan Mental Health Project was an emergency programme initiated in the context of the COVID-19 pandemic in response to serious concerns that emerged about the mental health of garment workers in Jordan. It was designed and implemented within a short timeframe and not with an initial aim to conduct a quantitative impact evaluation. Despite this limitation, this study stands as a valuable contribution to the scarce body of evidence on the effectiveness of workplace mental health interventions in LMICs, particularly in industrial settings. It would be valuable for future efforts that seek to build on this research to standardize the implementation of mental health interventions under study where possible.

Third, the construct validity of the self-reported job stress measure remains unestablished. Results relating to this outcome measure should therefore be interpreted with caution. In contrast, as discussed previously, the SWEMWBS has been well-validated across a diverse range of contexts. The results of this study that relate to the SWEMWBS outcome should therefore be regarded as the principal findings of this study. Future analyses may explore the construct validity of the self-reported job stress measure through factor analysis, leveraging additional measures of worker attitudes, behaviors and workplace conditions from Better Work worker survey data. The availability of multiple waves of Better Work worker survey data from multiple countries would make it feasible to conduct such an exercise to a high standard at little cost.

Perhaps most importantly, our results suggest that the training component of the Better Work Jordan mental health interventions appears to be a major driver of the positive effects observed across different treatment groups. It is particularly notable that the ATE coefficient for the SWEMWBS outcome variable in the training-only intervention group is comparably large to that in the all-interventions group, albeit imprecisely estimated and statistically insignificant. This is perhaps unsurprising given the nature of the counselling intervention. The counselling intervention is targeted at a small subset of workers who are at high risk of mental illness. Thus, this intervention may not affect the mental health status of a factory's worker population at large, but rather have an outsize effect on the mental health status of the small number of at-risk workers who receive counselling. The present study design is not ideally suited for examining the effects of such highly targeted interventions, as our data are derived from random surveys of factory workers. Future work may seek to research the effects of counselling specifically on those workers that receive counselling services.

Finally, our findings present evidence that willingness to seek does not appear to be playing a role in the observed effects of the interventions. Follow-up qualitative research could play a role in identifying other potential causal mechanisms in order to refine the theory of change for the Better Work Jordan Mental Health Project.

To further our understanding of the impacts of Better Work mental health interventions, future research could improve on the current study design in three other ways not discussed above. First, a longer follow-up period for the study. Extending the period of data collection post-intervention would help in examining the persistence and potential long-term effects of the interventions. Second, improving causal inference by conducting either a randomized controlled trial for future Better Work mental health programmes or by collecting longitudinal

(panel survey) data on workers' mental health outcomes for future quantitative impact evaluations. Third, investigation of heterogenous treatment effects among workers with different demographic characteristics – particularly, by gender and migration status. For the current study, such analyses would likely be underpowered and were therefore not conducted. Future studies with larger sample sizes could investigate whether Better Work mental health interventions have different effects on women versus men workers, or migrant versus non-migrant workers.

In summary, this study sheds light on the promise of Better Work mental health interventions in LMIC industrial settings. In particular, our findings underscore the positive effects of the Better Work approach to mental health support training, empowering workplace healthcare professionals and managers to identify and assist workers in need of mental health support.

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# 9. Appendices

### Appendix 1: Parallel trends tests

To test the parallel trends assumption, we limit analysis to the pre-treatment period and conduct placebo tests and event studies for each of the three dependent variables. Pre-treatment data for the SWEMWBS and willingness to seek help variables is only available for two time periods. Thus, placebo tests were conducted to test parallel trends for these variables. For the job stress variable, pre-treatment data is available for four time periods allowing us to conduct an event-study.

In the placebo test for the SWEMWBS and willingness to seek help variables, we employ a DID model estimation strategy wherein the "treatment" is designated to have been implemented during a pre-intervention period (when, in reality, no intervention was administered). If the parallel trends assumption is valid, the placebo DID estimation should not yield statistically significant treatment effects during this fictitious pre-intervention period. Significant treatment effects in this test would indicate a divergence in pre-treatment trends between the control and treatment groups, signaling a violation of the parallel trends assumption. The results are reported in tables A1 and A2.

**Table A1: Parallel trends placebo test for SWEMWBS variable (OLS regression)**

| | **All interventions** | **Training intervention** | **MHFP + training intervention** |
|---|---|---|---|
| **Treatment group** | 1.062** | 2.111*** | 1.655*** |
| | (0.476) | (0.588) | (0.611) |
| **Post-treatment period** | 0.172 | 1.874*** | 0.526 |
| | (0.443) | (0.675) | (0.722) |
| **Treatment group*** | -0.114 | -1.817** | -0.468 |
| **Post-treatment period** | (0.678) | (0.831) | (0.877) |

Robust standard errors in parentheses
*p<0.1; **p<0.05; ***p<0.01

**Table A2: Parallel trends placebo test for willingness to seek help variable (logistic regression)**

| | **All interventions** | **Training intervention** | **MHFP + training intervention** |
|---|---|---|---|
| Treatment group | -0.187 | 0.038 | -0.480** |
| | (0.162) | (0.205) | (0.238) |
| Post-treatment period | -0.219 | -0.161 | -0.916*** |
| | (0.150) | (0.228) | (0.264) |
| Treatment group* | -0.081 | -0.139 | 0.616** |
| Post-treatment period | (0.227) | (0.284) | (0.314) |

Robust standard errors in parentheses
*p<0.1; **p<0.05; ***p<0.01

For the SWEMWBS variable, the placebo tests demonstrate that that the parallel trends assumption is valid for the “All” interventions treatment group and the “MHFP + training” interventions treatment group. However, the assumption does not hold for the “Training” intervention treatment group.

For the willingness to seek help variable, the placebo tests demonstrate that the parallel trends assumption is valid for the “All” interventions treatment group and the “Training” intervention treatment group. However, the assumption does not hold for the “MHFP + training” intervention treatment group.

In the event study for the job stress variable, we similarly employ a DID model estimation strategy wherein a "treatment" is designated to have been implemented during each pre-intervention period (when, in reality, no intervention was administered). If the parallel trends assumption is valid, the placebo DID estimation should not yield statistically significant treatment effects during these fictitious pre-intervention periods. Significant treatment effects in these tests would indicate a divergence in pre-treatment trends between the control and treatment groups, signaling a violation of the parallel trends assumption. The results are reported in Table A3 and demonstrate that the parallel trends assumption does not consistently hold for any of the intervention treatment groups.

**Table A3: Parallel trends event study for job stress variable (OLS regression)**

| | **All interventions** | **Training intervention** | **MHFP + training intervention** |
|---|---|---|---|
| **Treatment group** | -0.010 | 0.304** | 0.254** |
| | (0.089) | (0.121) | (0.126) |
| **Post-treatment period 2** | -0.354*** | 0.298** | 0.217 |
| | (0.085) | (0.141) | (0.154) |
| **Post-treatment period 3** | -0.047 | 0.432*** | -0.019 |
| | (0.085) | (0.137) | (0.144) |
| **Post-treatment period 4** | -0.326*** | -0.016 | -0.436*** |
| | (0.088) | (0.139) | (0.144) |
| **Treatment group*** | 0.365*** | -0.288* | -0.206 |
| **Post-treatment period 2** | (0.130) | (0.173) | (0.183) |
| **Treatment group*** | 0.100 | -0.379** | 0.072 |
| **Post-treatment period 3** | (0.131) | (0.170) | (0.176) |
| **Treatment group*** | 0.287** | -0.023 | 0.397** |
| **Post-treatment period 4** | (0.133) | (0.171) | (0.175) |

Robust standard errors in parentheses
*p<0.1; **p<0.05; ***p<0.01

## Appendix 2: Covariates used to compute propensity scores

**SWEMWBS variable:** Gender, new worker status, indebtedness status, average weekly working hours.

**Job stress variable:** Migrant status, average weekly working hours, indebtedness status, gender of workplace supervisor, trade union membership status.

**Willingness to seek help variable:** Gender, migrant status, marital status, new worker status, motherhood status, years of education, average weekly working hours.

## Appendix 3: Summaries of weights and subgroup balance statistics

### SWEMWBS outcome

Summary of weights:
- Overall vs. subgroup proportion contribution:

| | post = 1 | post = 0 |
|---|---|---|
| Overall | 0.05 | 0 |
| Subgroup | 0.95 | 1 |

- - - - - - - Subgroup post = 1 - - - - - - -
- Weight ranges:

| | Min | | Max |
|---|---|---|---|
| treated | 1.6275 | \|----------\| | 3.0633 |
| control | 1.5331 | \|----------\| | 2.5119 |

- Units with 5 greatest weights by group:

| | 913 | 744 | 364 | 436 | 118 |
|---|---|---|---|---|---|
| treated | 2.7982 | 2.8173 | 2.8759 | 2.8759 | 3.0633 |
| | 196 | 206 | 249 | 178 | 186 |
| control | 2.4961 | 2.4961 | 2.4961 | 2.5119 | 2.5119 |

| Ratio | Coef of Var |
|---|---|
| treated 1.8823 | 0.1304 |
| control 1.6385 | 0.1123 |
| overall 1.9981 | 0.1224 |

- Effective Sample Sizes:

| | Control | Treated |
|---|---|---|
| Unweighted | 462.000 | 475.000 |
| Weighted | 456.254 | 467.079 |

- - - - - - - Subgroup post = 0 - - - - - - -
- Weight ranges:

| | Min | | Max |
|---|---|---|---|
| treated | 1.2386 | \|----------\| | 2.6672 |
| control | 1.6084 | \|----------\| | 3.6996 |

- Units with 5 greatest weights by group:

| | 328 | 300 | 38 | 188 | 244 |
|---|---|---|---|---|---|
| treated | 2.4586 | 2.5311 | 2.6672 | 2.6672 | 2.6672 |
| | 193 | 191 | 104 | 78 | 65 |
| control | 3.091 | 3.1813 | 3.3424 | 3.6629 | 3.6996 |

| Ratio | Coef of Var |
|---|---|
| treated 2.1535 | 0.1444 |
| control 2.3003 | 0.1458 |
| overall 2.9870 | 0.2022 |

- Effective Sample Sizes:

| | Control | Treated |
|---|---|---|
| Unweighted | 332.00 | 443.000 |
| Weighted | 325.11 | 433.974 |

Balance by cluster

- - - Cluster: 0 - - -

Balance Measures

| | Type | Diff.Adj | M.Threshold | V.Ratio.Adj |
|---|---|---|---|---|
| prop.score | Distance | 0.0085 | Balanced, <0.05 | 1.668 |
| gender_dummy | Binary | 0.0008 | Balanced, <0.05 | . |
| have_debt | Binary | -0.0010 | Balanced, <0.05 | . |
| under_six_months | Binary | 0.0002 | Balanced, <0.05 | . |
| total_avg_weekly_hours_ | Contin. | 0.0214 | Balanced, <0.05 | 1.660 |

Balance tally for mean differences

| | count |
|---|---|
| Balanced, <0.05 | 5 |
| Not Balanced, >0.05 | 0 |

Variable with the greatest mean difference

| Variable | Diff.Adj | M.Threshold |
|---|---|---|
| total_avg_weekly_hours_ | 0.0214 | Balanced, <0.05 |

Effective sample sizes

| | 0 | 1 |
|---|---|---|
| Unadjusted | 332. | 443. |
| Adjusted | 325.11 | 433.97 |

- - - Cluster: 1 - - -

Balance Measures

| | Type | Diff.Adj | M.Threshold | V.Ratio.Adj |
|---|---|---|---|---|
| prop.score | Distance | -0.0019 | Balanced, <0.05 | 1.2602 |
| gender_dummy | Binary | 0.0006 | Balanced, <0.05 | . |
| have_debt | Binary | 0.0006 | Balanced, <0.05 | . |
| under_six_months | Binary | 0.0007 | Balanced, <0.05 | . |
| total_avg_weekly_hours_ | Contin. | -0.0046 | Balanced, <0.05 | 1.3500 |

Balance tally for mean differences

| | count |
|---|---|
| Balanced, <0.05 | 5 |
| Not Balanced, >0.05 | 0 |

Variable with the greatest mean difference

| | Variable | Diff.Adj | M.Threshold |
|---|---|---|---|
| total_avg_weekly_hours_ | | -0.0046 | Balanced, <0.05 |

Effective sample sizes

| | 0 | 1 |
|---|---|---|
| Unadjusted | 462. | 475. |
| Adjusted | 456.25 | 467.08 |

- - - - - - - - - - - -

## Job stress outcome

Summary of weights:

- Overall vs. subgroup proportion contribution:

| | post = 1 | post = 0 |
|---|---|---|
| Overall | 0 | 0.27 |
| Subgroup | 1 | 0.73 |

- - - - - - - Subgroup post = 1 - - - - - - -

- Weight ranges:

| | Min | | Max |
|---|---|---|---|
| treated | 1.1288 | \|----------\| | 11.8588 |
| control | 1.0913 | \|----------\| | 8.7649 |

- Units with 5 greatest weights by group:

| | 373 | 655 | 673 | 319 | 62 |
|---|---|---|---|---|---|
| treated | 10.9176 | 10.9176 | 10.9176 | 11.25 | 11.8588 |

| | 934 | 724 | 503 | 325 | 176 |
|---|---|---|---|---|---|

```
 control  7.6393   7.8336   7.9951   8.7329   8.7649

Ratio Coef of Var
treated   10.5058 0.9208
control   8.0313   0.6265
overall   10.8663 0.7930

- Effective Sample Sizes:
                   Control  Treated
Unweighted         465.000 522.000
Weighted           334.135 282.747

 - - - - - - - Subgroup post = 0 - - - - - - -
- Weight ranges:
                   Min                          Max
treated            1.0978 |---------------------------| 10.1443
control            1.0817 |---------------------------| 10.2395

- Units with 5 greatest weights by group:
           520       387       100       351       361
 treated  8.8904    9.0218   10.1443   10.1443   10.1443

           73        309       363       496       68
 control  9.3968    9.3968    9.3968    9.3968   10.2395

Ratio Coef of Var
treated   9.2406     0.7731
control   9.4665     0.7015
overall   9.4665     0.7517

- Effective Sample Sizes:
                   Control  Treated
Unweighted         344.000 485.000
Weighted           230.772 303.808

Balance by cluster

 - - - Cluster: 0 - - -
Balance Measures
                                Type      Diff.Adj    M.Threshold       V.Ratio.Adj
prop.score                      Distance  -0.0097           Balanced, <0.05      1.2137
migrant                         Binary    -0.0108  Balanced, <0.05          .
total_avg_weekly_hours_  Contin.  0.0188   Balanced, <0.05      1.3226
have_debt                       Binary    0.0162   Balanced, <0.05          .
sup_gender                      Binary    0.0023   Balanced, <0.05          .
trad_union_memb                 Binary    0.0078   Balanced, <0.05          .

Balance tally for mean differences
                                count
Balanced, <0.05                 6
Not Balanced, >0.05             0

Variable with the greatest mean difference
Variable                                Diff.Adj              M.Threshold
 total_avg_weekly_hours_                  0.0188              Balanced, <0.05

Effective sample sizes
                                0          1
Unadjusted          344.       485.
Adjusted            230.77     303.81

 - - - Cluster: 1 - - -
Balance Measures
                                Type      Diff.Adj              M.Threshold       V.Ratio.Adj
prop.score                      Distance -0.0132              Balanced, <0.05      1.2991
migrant                         Binary    -0.0184             Balanced, <0.05          .
total_avg_weekly_hours_  Contin.  -0.0362            Balanced, <0.05      0.9055
```

| | | | | |
|---|---|---|---|---|
| have_debt | Binary | -0.0003 | Balanced, <0.05 | . |
| sup_gender | Binary | 0.0022 | Balanced, <0.05 | . |
| trad_union_memb | Binary | 0.0192 | Balanced, <0.05 | . |

Balance tally for mean differences

| | count |
|---|---|
| Balanced, <0.05 | 6 |
| Not Balanced, >0.05 | 0 |

Variable with the greatest mean difference

| Variable | Diff.Adj | M.Threshold |
|---|---|---|
| total_avg_weekly_hours | -0.0362 | Balanced, <0.05 |

Effective sample sizes

| | 0 | 1 |
|---|---|---|
| Unadjusted | 465. | 522. |
| Adjusted | 334.14 | 282.75 |

- - - - - - - - - - - -

## Willingness to seek help variable

Summary of weights:

- Overall vs. subgroup proportion contribution:

| | post = 1 | post = 0 |
|---|---|---|
| Overall | 0.36 | 0.1 |
| Subgroup | 0.64 | 0.9 |

- - - - - - - Subgroup post = 1 - - - - - - -

- Weight ranges:

| | Min | | Max |
|---|---|---|---|
| treated | 1.2633 | \|----------\| | 9.3153 |
| control | 1.1192 | \|----------\| | 4.6772 |

- Units with 5 greatest weights by group:

| | 876 | 716 | 699 | 419 | 137 |
|---|---|---|---|---|---|
| treated | 7.2765 | 7.7612 | 7.9109 | 8.8613 | 9.3153 |

| | 769 | 1053 | 614 | 493 | 273 |
|---|---|---|---|---|---|
| control | 4.3764 | 4.3764 | 4.3933 | 4.4794 | 4.6772 |

Ratio Coef of Var

| | | |
|---|---|---|
| Treated | 7.3737 | 0.6668 |
| Control | 4.1789 | 0.4569 |
| Overall | 8.3230 | 0.5695 |

- Effective Sample Sizes:

| | Control | Treated |
|---|---|---|
| Unweighted | 500.000 | 566.000 |
| Weighted | 413.783 | 392.019 |

- - - - - - - Subgroup post = 0 - - - - - - -

- Weight ranges:

| | Min | | Max |
|---|---|---|---|
| treated | 1.1965 | \|----------\| | 7.2692 |
| control | 1.1747 | \|----------\| | 5.7030 |

- Units with 5 greatest weights by group:

| | 769 | 487 | 291 | 383 | 95 |
|---|---|---|---|---|---|
| treated | 5.5639 | 5.9399 | 6.496 | 6.496 | 7.2692 |

| | 728 | 698 | 659 | 410 | 369 |
|---|---|---|---|---|---|
| control | 5.0886 | 5.4367 | 5.5014 | 5.6809 | 5.703 |

Ratio Coef of Var

```
treated   6.0753     0.5428
control   4.8549     0.4796
overall   6.1883     0.5418

- Effective Sample Sizes:
                Control  Treated
Unweighted      361.000  523.000
Weighted        293.655  404.158

Balance by cluster
- - - Cluster: 0 - - -
Balance Measures
                          Type      Diff.Adj  M.Threshold       V.Ratio.Adj
prop.score                          Distance -0.0177  Balanced, <0.1              1.1164
gender_dummy              Binary    -0.0122  Balanced, <0.1         .
migrant                           Binary    -0.0083  Balanced, <0.1         .
marital_status            Binary    0.0087   Balanced, <0.1         .
under_six_months          Binary    -0.0029  Balanced, <0.1         .
years_of_educ             Contin.   -0.0033  Balanced, <0.1              1.1357
total_avg_weekly_hours_   Contin.   -0.0139  Balanced, <0.1              1.3118
gender_kids_int           Binary    -0.0010  Balanced, <0.1         .

Balance tally for mean differences
                          count
Balanced, <0.1                8
Not Balanced, >0.1            0

Variable with the greatest mean difference
 Variable                 Diff.Adj             M.Threshold
 total_avg_weekly_hours_  -0.0139 Balanced, <0.1

Effective sample sizes
                          0      1
Unadjusted      361.   523.
Adjusted        293.65 404.16

 - - - Cluster: 1 - - -
Balance Measures
                          Type      Diff.Adj  M.Threshold       V.Ratio.Adj
prop.score                          Distance          -0.0142  Balanced, <0.1              1.1601
gender_dummy              Binary    -0.0265  Balanced, <0.1         .
migrant                           Binary    -0.0081  Balanced, <0.1         .
marital_status            Binary    0.0072   Balanced, <0.1         .
under_six_months          Binary    -0.0031  Balanced, <0.1         .
years_of_educ             Contin.             0.0105   Balanced, <0.1              1.1664
total_avg_weekly_hours_   Contin.   -0.0402  Balanced, <0.1              0.9467
gender_kids_int           Binary    -0.0061  Balanced, <0.1         .


Balance tally for mean differences
                          count
Balanced, <0.1                8
Not Balanced, >0.1            0

Variable with the greatest mean difference
Variable                  Diff.Adj             M.Threshold
 total_avg_weekly_hours_  -0.0402  Balanced, <0.1

Effective sample sizes
                          0          1
Unadjusted      500.       566.
Adjusted        413.78     392.02
 - - - - - - - - - - - -
```

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