

# Environmental assessments in the workplace: an analysis of workplace wellbeing facilities for women of reproductive age

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## Key points

- A survey of female employees at one Australian university, together with an environmental assessment, revealed that employees expected their workplace to support their health and the transition to parenthood, but access to resources varied across campuses
- Addressing the deficiencies and impact of the working environment on the wellbeing of female employees of reproductive age may require specific regulatory change and targeted strategies
- Aligning resources with the needs of the target population may lead to far-reaching employee benefits

## Abstract

**Objective:** To investigate the availability of resources at an Australian university workplace to support the health, wellbeing, and transition to parenthood of female employees working during the preconception, pregnancy, and postpartum periods.

**Type of program or service:** Workplace health promotion for female employees of reproductive age.

**Methods:** A survey of female employees aged 18–45 years evaluated participant health practices, availability of work and parenting supports, and access to health and wellbeing resources in the workplace. Additionally, an environmental assessment was completed by employees with a knowledge of local healthy lifestyle supports and a minimum of 2 years' employment. The assessment documented site characteristics and availability of wellbeing facilities across 10 campuses.

**Results:** There were 241 valid survey responses. Of 221 respondents to a question about workplace support, 76% ( $n = 168$ ) indicated that the workplace should play a role in supporting the transition to parenthood and in health promotion, with 64.1% of 223 participants disagreeing with the statement "my health is not the responsibility of the university". Both the survey and environmental assessment revealed that access to parenting resources to support employee health and wellbeing were suboptimal.

**Lessons learnt:** There is a misalignment between the needs of female employees working during these health-defining life stages, and the availability of resources to support those needs. Regulatory guidance may be required to navigate resource gaps within the work environment and address factors impacting the health and wellbeing of employees of reproductive age.

## Introduction

Workplaces are well positioned to support the wellbeing of preconception, pregnant, and postpartum (PPP) working women<sup>1</sup>, as 75% of Australian women of reproductive age are in the workforce.<sup>2</sup> Further, employers have a duty of care to the health and safety of their employees.<sup>3</sup> Workplace wellbeing programs for women often seek to improve individuals' health behaviours<sup>4</sup> and the physical and social environment can play an important role in preventive health by making "healthy choices easy choices" and providing individuals with greater control over factors impacting their health.<sup>5</sup> Availability of family-friendly supports (for example, flexible working arrangements) has been associated with reduced parenting stress.<sup>6</sup> Conversely, negative perceptions of workplace family support have been associated with poor physical health, depression and increased absenteeism.<sup>7</sup> Additionally, working conditions (for example, psychosocial factors) may affect preconception health practices, pregnancy-related conditions, fetal health and development, reproductive health, and pregnancy outcomes.<sup>8,9</sup>

Formative research to develop a holistic workplace program to promote the wellbeing and health practices of PPP women at the University of Tasmania, Australia, indicated dissatisfaction with the availability of parenting supports and a lack of policy focus on overall wellbeing.<sup>8</sup> Therefore, to explore the potential points of intervention at an environmental level, we conducted a survey and environmental assessment to investigate the availability and access to health and wellbeing resources for women working across the reproductive years at a university workplace.

## Methods

We conducted a 67-question cross-sectional Work and Wellbeing Survey (See Supplement S1, available from: [figshare.com/s/d4d0268f637983aab6b6](https://figshare.com/s/d4d0268f637983aab6b6)) at the University of Tasmania in November 2018. To facilitate recruitment, the survey was emailed once to all female staff aged 18–45 years (2599; 37% total staff), by the university's People and Wellbeing (human resources) team, and was advertised in staff newsletters. The survey aimed to capture data on women's wellbeing needs and access to resources, and included items relating to general health, exercise and fitness, diet, sleep and stress, workplace (organisation), work and parenting.

We also conducted an environmental assessment using a modified 53-question Environmental Assessment Tool (EAT; Supplement S2, available from: [figshare.com/s/d4d0268f637983aab6b6](https://figshare.com/s/d4d0268f637983aab6b6)) adapted from DeJoy et al.<sup>10</sup> Modifications to the original EAT included units of measurement (imperial to metric), employee demographics (e.g., ethnicity), and inclusion of supports specific to the PPP years (e.g., breastmilk storage

facilities). Female employees with a knowledge of local facilities and programs that promoted wellbeing (as indicated in recruitment material), and a minimum 2 years' employment were recruited from university campuses with 10 or more female staff (aged 18–45 years). Participants were recruited to complete the EAT through department newsletters, the staff portal and emails sent to the executive assistants of senior employees. The EAT was completed by 10 participants across 10 university campuses (small to large campuses located across four distinct regions in Tasmania and Sydney; Supplement S3 for scale, available from: [figshare.com/s/d4d0268f637983aab6b6](https://figshare.com/s/d4d0268f637983aab6b6)) between November 2020 and April 2021. At one campus where there was more than one volunteer, the first to respond was selected to complete the survey.

Data were collected using REDCap<sup>11</sup> and analysed using IBM SPSS Statistics (version 25.0) and RStudio (version 4.2.2). This study was approved by the University of Tasmania Human Research Ethics Committee (H0017313 and H0022986). All participants provided informed consent.

## Results

### Survey results

There were 241 valid responses to the Work and Wellbeing survey (9% response rate), with more than 80% of respondents aged 32–45 years old (Table 1). Half were caring for children and 70 respondents (29%) planned to start or add to their family in the next 2 years. The median participant BMI was in the 'normal' range (24.4 kg/m<sup>2</sup>), however 76% wanted to weigh less. The median sitting time of respondents was considerably higher at work (85% time), compared with away from the university (30% time). Most respondents disagreed ('disagree' or 'strongly disagree') with the statement 'my health is not the responsibility of the university' ( $n = 143$ , 64%) and the majority ( $n = 168$ , 76%) felt the workplace had a role in supporting the transition to parenthood. Access to supports for PPP employees (e.g., parenting facilities or flexible working arrangements) was not universally available. Access to general amenities (e.g., shower and changing facilities) varied among respondents (Supplement S4, available from: [figshare.com/s/d4d0268f637983aab6b6](https://figshare.com/s/d4d0268f637983aab6b6)).

**Table 1.** Description of survey respondents (*N* = 241)<sup>a</sup>

Characteristic	Survey respondents, <i>n</i> (%)	Characteristic	Survey respondents, <i>n</i> (%)
<b>Demographic information</b>		<b>Demographic information</b>	
<b>Age group (years) (<i>n</i> = 241)</b>		<b>Planning to start or add to family in next 2 years (<i>n</i> = 239)</b>	
18–24	10 (4.1)	Yes	70 (29.3)
25–31	36 (14.9)	No	169 (70.7)
32–38	100 (41.5)	<b>Weight, health practices and wellbeing</b>	
39–45	95 (39.4)	<b>BMI<sup>c</sup> (<i>n</i> = 227)</b>	
<b>Education level (<i>n</i> = 241)</b>		<b>Median kg/m<sup>2</sup> (range)</b>	
Year 12 or below	15 (6.2)	24.4 (17.9–48.3)	
Certificate level	11 (4.6)	<b>Weight preference (<i>n</i> = 241)</b>	
Diploma	12 (5.0)	<b>Happy as I am</b>	
Bachelor's degree	65 (27.0)	1–5 kg more	
Higher university degree	138 (57.3)	1–5 kg less	
<b>Aboriginal or Torres Strait Islander (<i>n</i> = 240)</b>		6–10 kg less	
Yes	3 (1.3)	More than 10 kg less	
No	237 (98.8)	<b>Percentage of time spent sitting (<i>n</i> = 234)</b>	
<b>Employment status (<i>n</i> = 241)</b>		<b>Median % time (range)</b>	
Ongoing	129 (53.5)	At the university	
Fixed term	85 (35.3)	Away from the university	
Casual	27 (11.2)	<b>Fitness rating, 1 = lowest rating, 10 = highest rating (<i>n</i> = 231)</b>	
<b>Employment classification level<sup>b</sup> (<i>n</i> = 240)</b>		<b><i>n</i> (%)</b>	
Academic A–C	53 (22.1)	1–5	
Academic D–E	1 (0.4)	6–10	
HEO 1–4	27 (11.3)	<b>Diet rating, 1 = lowest rating, 10 = highest rating (<i>n</i> = 230)</b>	
HEO 5–6	75 (31.3)	<b><i>n</i> (%)</b>	
HEO 7+	59 (24.6)	1–5	
Not applicable	25 (10.4)	6–10	
<b>Caring for children (<i>n</i> = 240)</b>		<b>Frequency of stress (<i>n</i> = 192)</b>	
Yes	126 (52.5)	<b><i>n</i> (%)</b>	
No	114 (47.5)	Rarely or sometimes	
<b>Number of children (<i>n</i> = 126)</b>		Often or very often	
1	46 (36.5)	Always	
2	62 (49.2)	<b>Response to questions/statements</b>	
3	15 (11.9)	<b>Does the workplace have a role in supporting the transition to parenthood? (<i>n</i> = 221)</b>	
4	3 (2.4)	<b><i>n</i> (%)</b>	
		Yes	
		No	

(Table 1 continued next page)

**Table 1.** Description of survey respondents (*N* = 241) (continued)

Characteristic	Survey respondents, <i>n</i> (%)
<b>Demographic information</b>	
My health is not the responsibility of the university ( <i>n</i> = 223)	<i>n</i> (%)
'Agree' or 'strongly agree'	80 (35.9)
'Disagree' or 'strongly disagree'	143 (64.1)
I am too busy with work to participate [in workplace wellbeing] activities ( <i>n</i> = 222)	<i>N</i> = 222 (%)
'Agree' or 'strongly agree'	152 (68.5)
'Disagree' or 'strongly disagree'	70 (31.5)

Data source: University of Tasmania Work and Wellbeing Survey, 2018.

- <sup>a</sup> Variable *n* according to total number of responses.
- <sup>b</sup> Academic A–C = Lecturer to Senior Lecturer (sometimes also Assistant Professor); Academic D–E = Associate Professor to Professor; HEO 1–7+ = Higher Education Officer, professional employees of increasing skill, expertise and experience level.
- <sup>c</sup> Outliers excluded based on data cleaning procedures from Australian Longitudinal Study on Women's Health<sup>12</sup>: Weight > 139.9 kg; height > 200 cm and < 120 cm

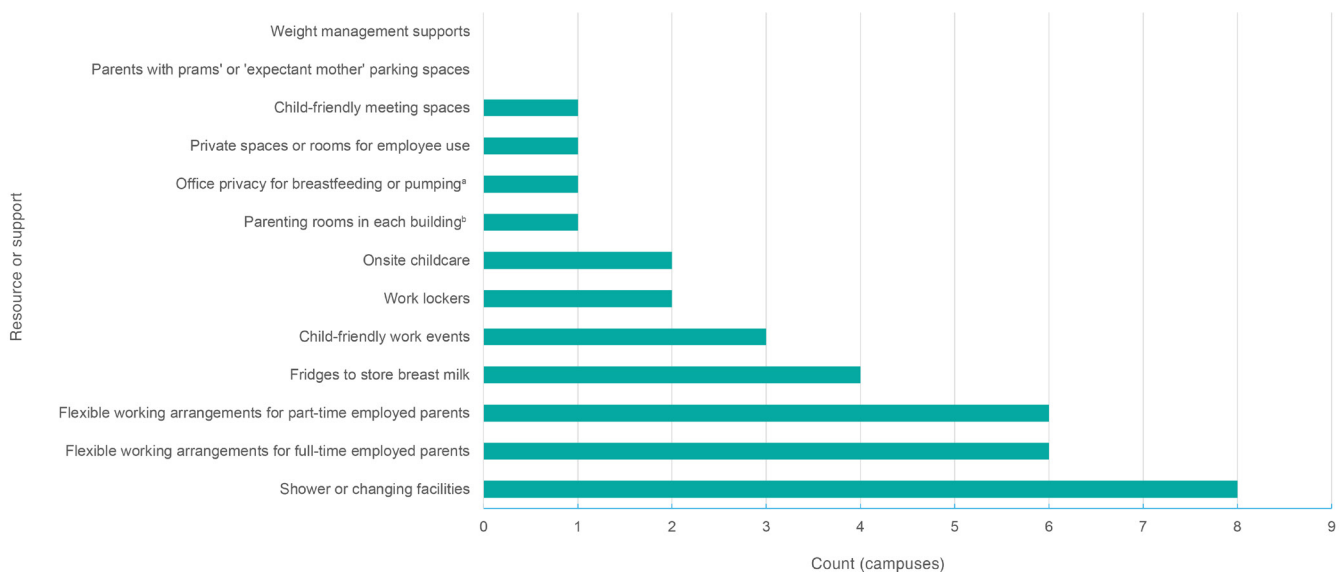
## Environmental assessment results

The EAT found that there was access to shower or changing facilities (*n* = 8, Figure 1) at most campuses, however few provided lockers (*n* = 2). Parenting amenities (for example, childcare) were unavailable at most worksites. Access to flexible work arrangements (a university-wide policy) varied according to work role, workload, manager and available cover. Respondents indicated that policies or procedures were in place to support employee mental health at more than half the campuses (*n* = 6) but not to support physical fitness, healthy eating, or pregnancy or parenting (Figure 2). Availability of resources to support fitness (e.g., walking paths, staff physical activity challenges, gym resources) and healthy eating (e.g., onsite cafes) varied across campuses. Vending machine images provided by participants demonstrated ease of access to discretionary foods (See Supplement S3, available from: [figshare.com/s/d4d0268f637983aab6b6](https://figshare.com/s/d4d0268f637983aab6b6)).

## Discussion

To our knowledge, we are the first to assess access to wellbeing resources for PPP female employees in a workplace and, more specifically, within a higher education workplace setting. Survey participants indicated that the university plays a role in their health and supporting the transition to parenthood. However, awareness and/or availability of amenities to complement the health and wellbeing of employees across the PPP

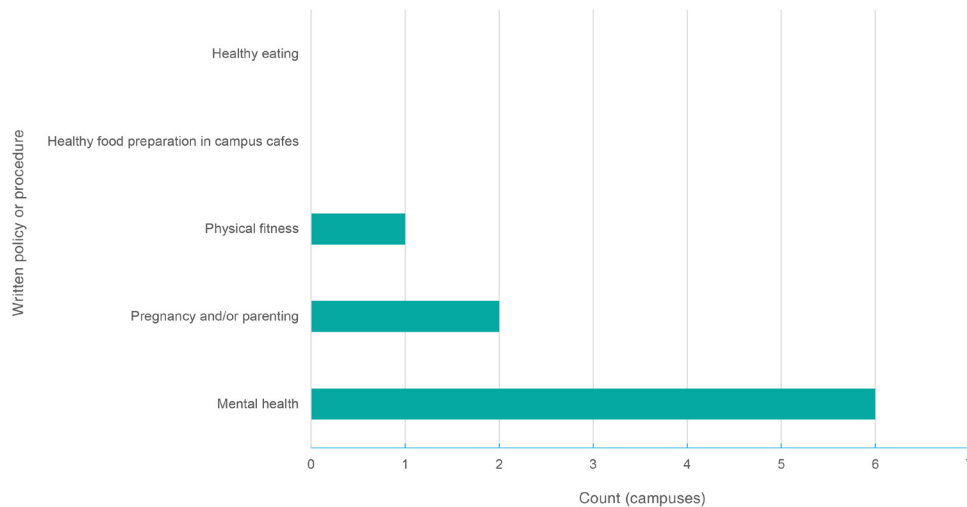
**Figure 1.** Campus characteristics, facilities, and programs to support wellbeing from the environmental assessment (*N* = 10 campuses)



Data source: Environmental assessment at University of Tasmania.

- <sup>a</sup> *n* = 9.
- <sup>b</sup> Under certain circumstances.

**Figure 2.** Campus policies to support wellbeing from the environmental assessment ( $N = 9$  campuses)<sup>a</sup>



Data source: Environmental assessment at University of Tasmania.

<sup>a</sup> One participant did not complete questions relating to current health promotion policies.

periods was variable or absent. This included physical amenities (for example, parenting rooms in each building) and written policies and procedures (for example, to support healthy eating).

In capturing the workplace wellbeing needs and expectations of PPP working women and variation in access to corresponding resources, this study highlighted the inequitable resource distribution for female employees of reproductive age. Embracing a future where workplaces actively seek to “protect, serve and promote health”<sup>13</sup> should include monitoring for such inequities among subgroups of workers, as they may result in disproportionate impacts on health.<sup>14</sup> Given the potential for far-reaching, intergenerational benefits to health<sup>1</sup> and emerging evidence linking work to the health practices and wellbeing of PPP working women<sup>9</sup>, there is a compelling need to improve the work environment.

Limitations of this study included a low survey response rate (9%), and that the sample rated diet and fitness highly compared to national averages.<sup>15</sup> This may be due to the use of self-reported data, the high education status of respondents, or nonresponse bias (leading to an underrepresentation of those with lower health status).<sup>16</sup> Thus, caution is required when extending findings from this sample to the wider university population. The original EAT survey<sup>10</sup> was designed to be undertaken by researchers, however the local knowledge of participants was valuable for overcoming previously identified gaps in wellbeing provision (e.g., uncoordinated or unsustainable advertising of wellbeing activities).<sup>8</sup> Our EAT was conducted during the coronavirus disease 2019 (COVID-19) pandemic, across a 6-month time frame. Therefore, there may have been some variability in resource availability, as many activities are organised around teaching semesters. This suggests that current supports may be targeted at students, rather than staff.

## Application of this work

While the current findings will contribute to the development of a place-based workplace program, there is a need to address work processes and structural inequities in the higher education setting internationally, as demonstrated in the US and UK.<sup>17,18</sup> This can range from the decreased representation of women holding higher-level academic positions<sup>19</sup> to the nature of academic work, which results in work intensification and adversely affects employees' work-life-family balance.<sup>20</sup> The breadth of such inequities may be clarified by applying an environmental assessment, and subsequently modifying inherent biases and impacts on health and wellbeing at an organisational level.

## Conclusion

There are deficiencies in the working environment to support general employee health and, especially, that of employees in the preconception, pregnancy and postpartum years. Growing awareness of the pathways between work and health suggests that such deficiencies may have tangible impacts on PPP working women.<sup>9</sup> Caution is required in generalising the current findings, however regulatory change may be required to elaborate on employers' duty of care to address the pitfalls and inequities of the physical working environment for PPP female employees.

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## Peer review and provenance

Externally peer reviewed, invited.

## Competing interests

KA and AH are employees of the University of Tasmania. SM is a PhD candidate at the University of Tasmania.

## Author contributions

AH, HS and SM were responsible for the study conceptualisation. All authors were responsible for methodology, review and editing of the manuscript. SM was responsible for investigation, formal analysis, data curation, project administration and writing the original draft. SM and KA were responsible for visualisation, AH and HS were responsible for funding acquisition and KA, CB, BH, HS and AH were responsible for supervising SM's PhD work on the project.

## References

1. Madden SK, Skouteris H, Bailey C, Hills AP, Ahuja KDK, Hill B. Women in the workplace: promoting healthy lifestyles and mitigating weight gain during the preconception, pregnancy, and postpartum periods. *Int J Environ Res Public Health*. 2020;17(3):821.
2. Australian Bureau of Statistics. Labour force, Australia: changing female employment over time. Canberra: ABS; 2021 [cited 2023 Jan 27]. Available from: [www.abs.gov.au/articles/changing-female-employment-over-time](http://www.abs.gov.au/articles/changing-female-employment-over-time)
3. Safe Work Australia. Model work health and safety regulations. Canberra: Parliamentary Counsel's Committee; 2022 [cited 2023 Feb 9]. Available from: [www.safeworkaustralia.gov.au/sites/default/files/2022-06/model\\_whs\\_regulations\\_-\\_14\\_april\\_2022.pdf](http://www.safeworkaustralia.gov.au/sites/default/files/2022-06/model_whs_regulations_-_14_april_2022.pdf)
4. Madden SK, Cordon EL, Bailey C, Skouteris H, Ahuja K, Hills AP, Hill B. The effect of workplace lifestyle programmes on diet, physical activity, and weight-related outcomes for working women: a systematic review using the TIDieR checklist. *Obes Rev*. 2020;21(10):e13027.
5. Koelen MA, Lindström B. Making healthy choices easy choices: the role of empowerment. *Eur J Clin Nutr*. 2005;59(1):S10–6.
6. Hwang W. The effects of family-friendly policies and workplace social support on parenting stress in employed mothers working nonstandard hours. *J Soc Serv Res*. 2019;45(5):659–72.
7. Matias M, Ferreira T, Vieira J, Cadima J, Leal T, Mena Matos P. Workplace family support, parental satisfaction, and work–family conflict: individual and crossover effects among dual-earner couples. *Appl Psychol*. 2017;66(4):628–52.
8. Madden SK, Blewitt CA, Ahuja KDK, Skouteris H, Bailey CM, Hills AP, Hill B. Workplace healthy lifestyle determinants and wellbeing needs across the preconception and pregnancy periods: a qualitative study informed by the COM-B model. *Int J Environ Res Public Health*. 2021;18(8):4154.
9. Madden SK, Ahuja KDK, Blewitt C, Hill B, Hills AP, Skouteris H. Understanding the pathway between work and health outcomes for women during the preconception, pregnancy, and postpartum periods through the framing of maternal obesity. *Obes Rev*. 2023;24(12):e13637.
10. Dejoy DM, Wilson MG, Goetzel RZ, Ozminkowski RJ, Wang S, Baker KM, et al. Development of the Environmental Assessment Tool (EAT) to measure organizational physical and social support for worksite obesity prevention programs. *J Occup Environ Med*. 2008;50(2):126–37.
11. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377–81.
12. Ball J, Ford J, Russell A, Williams L, Hockey R. Data cleaning for height and weight: Newcastle, NSW: ALSWH data dictionary supplement; 2009 [cited 2023 Jan 27]. Available from: [alswh.org.au/wp-content/uploads/2020/08/DDSSection3Data-Cleaning-for-Height-and-Weight.pdf](http://alswh.org.au/wp-content/uploads/2020/08/DDSSection3Data-Cleaning-for-Height-and-Weight.pdf)

13. Ghebreyesus TA [@DrTedros]. Half of the world's population are working people: [twitter.com/DrTedros/status/1728474901734883578](https://twitter.com/DrTedros/status/1728474901734883578). US: X; 26 November 2023 [cited 2023 Dec 17]. Available from: [twitter.com/DrTedros/status/1728474901734883578](https://twitter.com/DrTedros/status/1728474901734883578)
14. World Health Organization. WHO guidelines on mental health at work. Geneva: WHO; 2022 [cited 2023 Dec 1]. Available from: [iris.who.int/bitstream/handle/10665/363177/9789240053052-eng.pdf?sequence=1](https://iris.who.int/bitstream/handle/10665/363177/9789240053052-eng.pdf?sequence=1)
15. Nichols M. Diet and physical activity in Australian adults. Victoria: Obesity Evidence Hub, Cancer Council; 2023 [cited 2023 Dec 2]. Available from: [www.obesityevidencehub.org.au/collections/trends/adults-diet-exercise](http://www.obesityevidencehub.org.au/collections/trends/adults-diet-exercise)
16. Cheung KL, ten Klooster PM, Smit C, de Vries H, Pieterse ME. The impact of non-response bias due to sampling in public health studies: a comparison of voluntary versus mandatory recruitment in a Dutch national survey on adolescent health. *BMC Public Health*. 2017;17(1):276.
17. Morgan AU, Chaiyachati KH, Weissman GE, Liao JM. Eliminating gender-based bias in academic medicine: more than naming the "elephant in the room". *J Gen Intern Med*. 2018;33(6):966–8.
18. Davies J, Yarrow E, Syed J. The curious under-representation of women impact case leaders: can we disengage inequality regimes? *Gen Work Organ*. 2020;27(2):129–48.
19. Curtis JW. The employment status of instructional staff members in higher education, Fall 2011. American Association of University Professors. 2014 [cited 2024 Jan 23]. Available from: [www.aaup.org/sites/default/files/files/AAUP-InstrStaff2011-April2014.pdf](http://www.aaup.org/sites/default/files/files/AAUP-InstrStaff2011-April2014.pdf)
20. Hardy A, McDonald J, Guijt R, Leane E, Martin A, James A, et al. Academic parenting: work–family conflict and strategies across child age, disciplines and career level. *Stud High Educ*. 2018;43(4):625–43.