

MEASURING THE BUSINESS CASE FOR WORKFORCE NUTRITION PROGRAMMES



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**Evert-jan Quak, Christina Nyhus Dhillon, Ayako
Ebata, Inka Barnett & Jodie Thorpe**



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SUMMARY

Workforce Nutrition Programmes (WNPs) can improve the health of workers, but with mixed results for a business case—which is crucial to their sustainability. This paper thus explores impact pathways and metrics used to assess the business benefits of WNPs, as well as the factors that influence the business case, with the aim of informing future interventions and research.

Business outcomes of WNPs include reduced sickness absence, reduced voluntary staff turnover, and reduced corporate health costs, which contribute to cost savings. Increased productivity and reduced presenteeism contribute to increased sales and revenues. Furthermore, improved employee job satisfaction can be considered as an intermediary business benefit, while WNPs also having the potential to increase company reputation.

While most of the literature is based on high-income countries, to implement WNPs in low- and middle-income countries (LMICs), contextual and enabling factors need to be understood and reflected in strong programme design, which results in more beneficial business outcomes. Business characteristics, such as labour intensity, salary costs, and mechanised work, are also relevant in determining whether better nutrition and health in the workplace could result in financial benefits for companies. For example, labour-intensive, relatively low-technology industries (e.g., textiles, agribusiness) might have lower cost savings but higher productivity gains. In case of breastfeeding support initiatives, national regulations and company policy on maternity leave also matter.

Overall, there is increasing evidence that 'doing good' for workforce health and nutrition could be good for business, or at least does not harm a business. However, better insights on how to measure and validate the business case for WNPs in LMICs are needed.

KEY MESSAGES

- Workforce Nutrition Programmes address all forms of malnutrition.
- Better health and nutrition of workers can entail business benefits, such as cost savings and increased sales and revenues.
- Important indicators to measure for understanding the business case are sickness absence, voluntary staff turnover, labour productivity, job satisfaction, and corporate reputation.
- Enabling factors, such as workforce baseline, wage costs, and capacities affect outcomes, which need to be understood in the context of LMICs.

BACKGROUND AND OBJECTIVE

To address persistent nutrition-related health issues, interventions can be designed and implemented to target improved nutritional intake of workers at the workplace. Interventions that target the nutritional intake at the workplace ideally follow the four pillars of the Workforce Nutrition Alliance¹: providing healthy and nutritious food at the workplace (access to food), nutrition education, nutrition health checks, and support for breastfeeding.

Sufficient evidence shows that Workforce Nutrition Programmes (WNPs) positively affect the health and nutrition of workers (Nyhus Dhillon & Ortenzi, 2023), but how that translates into business outcomes is far less researched, particularly in the context of low- and middle-income countries (LMICs). However, evidence supporting a business case (i.e., a viable business opportunity based on a comparison of the benefits and costs of an intervention) for WNPs could incentivise business leaders to invest in these interventions. This paper thus explores how to assess the business benefits of WNPs, as well as the factors that influence the business case, with the aim of informing future interventions and research.

Because of a lack of studies on business outcomes for WNPs specifically, the findings are based on an extensive literature review on the business case for broader workforce health and wellness interventions, which often include nutrition elements and provide insights into how to measure the business case for WNPs. Thirty-six studies were selected, mostly from high-income countries, of which 12 had an exclusive focus on breastfeeding interventions. The reviewed systematic reviews are summarised in a table in Annex 1, the reviewed studies on specific interventions in a table in Annex 2, and citations for all 36 reviewed studies are given in Annex 3.²

Because of the lack of evidence from LMICs, this briefing paper explores potential research design in LMICs by learning from existing research to identify impact pathways, indicators and their metrics to measure the business case of WNPs relevant in lower-income contexts.

RESULTS

INDICATORS AND IMPACT PATHWAYS

The reviewed literature generally suggests a positive business case for workforce-related health and nutrition programmes, particularly for larger companies, although with large differences in study design and in the success ratios identified (Baxter et al., 2014; Grimani et al., 2019; Osilla et al., 2012; Schliemann & Woodside, 2019). Based on these results, Figure 1 conceptualises the impact pathways that can be used to assess and measure the business case of WNPs. These impact pathways start from the baseline problem that poor diets can make workers weak and lethargic at work and/or being absent from work; better nutritional intake enabled by providing better food at work, alongside nutrition education and health checks at work, offers a solution to this. The assumption is that

¹ See more about the Workforce Nutrition Alliance at <https://workforcenutrition.org/>

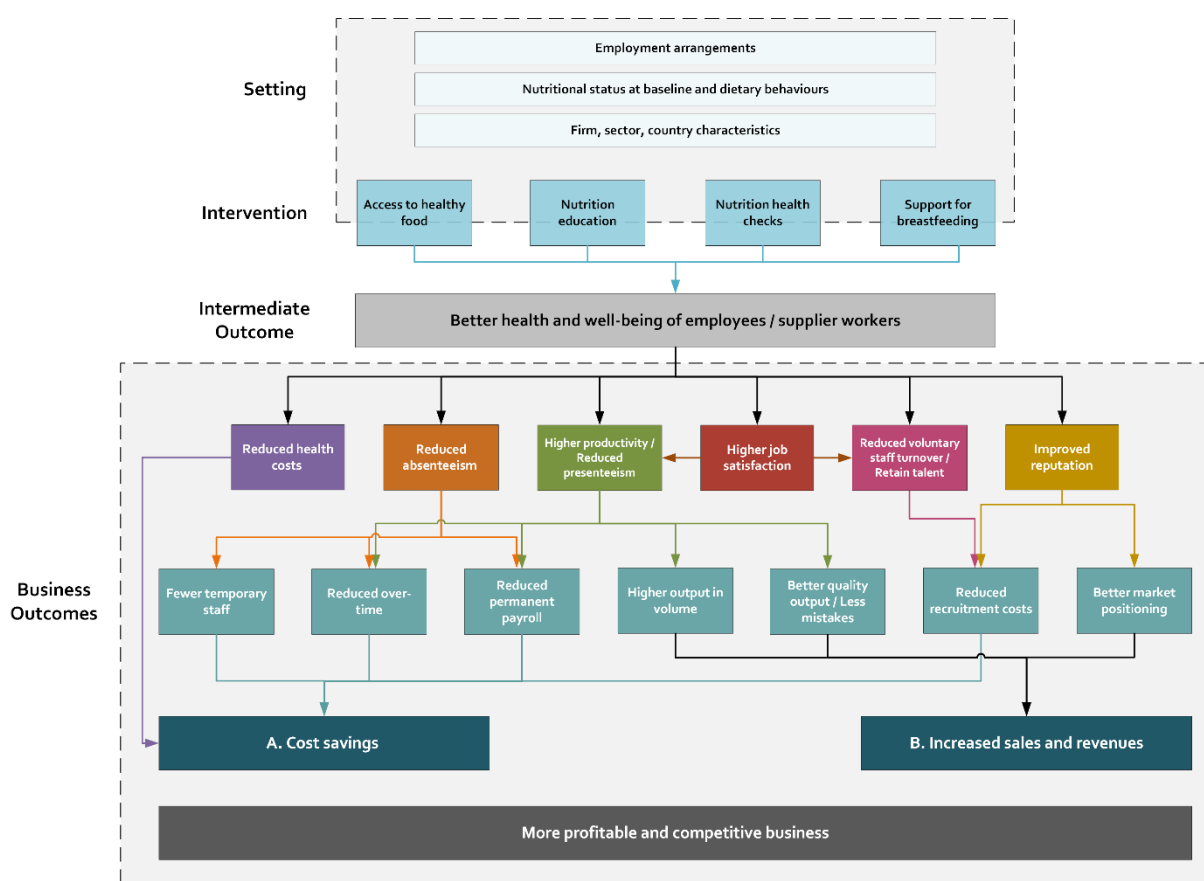
² The detailed findings of the review on business outcomes are published elsewhere.

these interventions result in immediate and longer-term health outcomes, which could result in three general business outcomes:

- Workers have **higher concentration and energy** levels and have **stronger immune responses** due to healthier diets, which reduces absenteeism due to sickness, reducing healthcare costs and costs related to recruiting temporary staff.
- Workers **feel better at work (motivational) and have higher concentration and energy levels**, which improves their productivity and quality of work (e.g., less mistakes and accidents), which relates to increased sales and revenues.
- At a company level, having healthier workers could increase business **reputation and relationships** with key stakeholders. If firms introduce these programmes with their suppliers, they might improve the volume, reliability, and quality of critical supplies.

The breastfeeding support pillar of WNP is different, as the starting point is improving the recovery (and health) of women after giving birth, as well as improving the health of the baby, leading to reduced absenteeism from infant-related sick days. Breastfeeding support may also reduce stress and improve job satisfaction for these women and have positive impacts on the reputation of companies, helping them attract talented women employees (Litwan et al., 2021; Vilar-Compte et al., 2021).

Figure 1. Conceptualisation of impact pathways for WNP



Business outcomes are primarily measured in terms of reduction in healthcare costs, reduction in sickness absence (absenteeism), reduction in voluntary staff turnover, and increase in productivity. Particularly the literature on workforce initiatives in the U.S.

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context measures reduced health insurance cost as a business outcome because American companies pay for employee health coverage. The evidence from systematic reviews shows that workforce interventions in such contexts can reduce healthcare costs (Baicker et al., 2010; Osilla et al., 2012; Baxter et al., 2014). Companies have also managed to reduce the costs of absenteeism after implementing workforce health and nutrition programmes (Baicker et al., 2010; Lee et al., 2010; Osilla et al. 2012; Grimani et al., 2019). For example, Lee et al. (2010) mention that workforce health and nutrition programmes can reduce sickness absence by between 25% and 30% within four years. Although less studies have looked explicitly at the cost savings of voluntary staff turnover (Lee et al., 2010; Berry et al., 2010), the evidence suggests that such savings are achievable but are less pronounced than those for healthcare costs and sickness absenteeism.

Effects on company reputation and employee job satisfaction are often assumed but rarely measured for the business case. The evidence suggests that improved employee satisfaction can be associated with improved productivity and reduced voluntary staff turnover, as well as the WNP being a recruiting tool to attract top talent (Lee et al., 2010; Marshall, 2020; Jensen, 2011). Existing evidence does not empirically test the reputational benefits from such programmes, but the idea is discussed that workforce health and nutrition programmes could improve a company's reputation amongst consumers, shareholders, and employees, which leads to financial benefits (Lee et al., 2010; MQSUN+, 2019).

There are thus four tangible indicator areas for business outcomes that can be used for WNP:

- **Healthcare costs** (often including insurance premiums), particularly in the context of the United States and other countries where employers pay all or part of healthcare or health insurance costs. Potential financial gains are: reduced legal costs/claims; reduced insurance premiums; reduced healthcare costs.
- **Sickness absence** (absenteeism) from work. Potential financial gains are: Reduced overtime payments; reduced temporary recruitment; and reduced permanent staff payroll.
- **Voluntary staff turnover**. Potential financial gains are reduced recruitment costs.
- The increase of **productivity**. Potential financial gains are: Increased revenues and reduced permanent staff payroll.

And two less-tangible indicator areas:

- **Employee satisfaction**. Potential financial gains are improved productivity, reduced voluntary staff turnover, and easier (and lower cost) recruitment.
- **Reputational benefits**. Potential financial gains being better market positioning and reduced recruitment costs because positive reputation attracts well-connected and better skilled employees.

RETURN ON INVESTMENT

Businesses would be incentivised to invest in WNP if there were a positive return on investment (ROI) to doing so – i.e., if the programmes yielded more financial benefits than costs. However, not all business outcomes are or can be reliably monetised. The literature that measures the ROI for workforce health and nutrition interventions shows there is often a positive ROI, but measured for a limited number of business outcomes, such as cost savings through reduced healthcare costs or reduced absenteeism. Using the ROI to

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measure the business case, the reviewed literature makes three distinctions between the above-mentioned indicators.

First, it only uses certain measurable indicators for ROI. Reduced healthcare costs are mostly based on total medical cost savings made during the period of the intervention. This is mostly based on the annual or monthly cost reduction per worker gained through the intervention, as a measure of healthcare coverage costs and workers' compensation segments, including claims costs and legal fees. These are often assessed using claims or medical records, databases, health department norms, and participant self-reporting (Baxter et al., 2014). Reduced sickness absence is mostly defined as the average number of days of reduced sickness absence per worker per month or year (Bell & Taylor, 2019). Each company should estimate how much a day of sickness absence costs for a certain work unit, which ideally should include additional over-time and temporary recruitment costs. Some scholars have developed models to predict absenteeism within the workforce (Lawrance et al., 2021). Reduced voluntary staff turnover costs is based on the reduction in annual average turnover rate during the period of the intervention. The cost of one person replaced is an average that include recruitment costs, and ideally should include reduced productive staff time, management time, and training costs during the inception phase (Lee et al., 2010).

Second, there is no clear definition of productivity in the reviewed literature, and therefore the measurability of productivity within ROI is highly debated. Productivity is often measured based on a combination of absenteeism (being absent from work) and presenteeism (being present at work but less productive during that time). Because of the limitations to measure presenteeism, which is often intangible, productivity is often associated with absenteeism, but this is a narrow and limited measure for productivity. Indeed, some studies suggest that high presenteeism may cost businesses financially more than absenteeism (Loeppke et al., 2009; Collins et al., 2005). Improved employee productivity due to a workforce intervention should thus ideally include a measure of reduced presenteeism (i.e., staff completing an increased workload due to being fully alert and energised and capable of work). However, methods to measure the value of presenteeism remain imperfect (Kigozi et al., 2017). Mattke et al. (2011) categorised the estimation of presenteeism into three approaches:

- Direct estimation of productivity loss in hours, estimated based on questions to employees such as the average number of hours with low concentration at work, when working more slowly than usual, or when feeling fatigued at work.
- Workers' estimation of the percentage loss (or gain) in their productivity compared with a baseline or benchmark value for each individual.
- Comparing productivity or work performance of an individual with that of a colleague in a similar role.

Some studies refer to other values of productivity, such as reduced errors or rejects, increased employee utilisation rates, increased wages, and increased output per worker (Marcus et al., 2021; Arsyad et al., 2019; Gopaldas & Gujral, 2003). Commonly used output metrics include kilograms picked per worker per day for tea pickers and other harvesters, cubic metres of soil moved per day for road construction workers, number of items manufactured or processed per day for garment or other factory workers, and cubic metres of area cultivated per day for agricultural workers like weeders. These are helpful but cannot be standardised across industries for larger ROI studies. In cases where workers are paid for the output they produce, the financial outcomes for the business

might be less relevant, but workers' incomes may increase (Gopaldas et al., 2003). Higher productivity of wage workers means fewer workers needed to produce the same volumes, but higher labour productivity could also entail higher wages; the net result in terms of wage costs is thus unclear. More automated and mechanised work might also reduce the productivity impact of WNP (Marcus et al., 2021). Productivity outcomes from workforce interventions are thus highly different across sectors.

Intangible business benefits, such as improved corporate reputation and employee satisfaction are all relevant, but not included in quantitative ROI measurements because they are difficult to monetise. However, they can still be measured. Improved employee satisfaction is associated with improved productivity and reduced voluntary staff turnover; the WNP can also serve as a recruiting tool to attract top talent, but causality is not always easy to find (Marshall, 2020). Employee satisfaction is measured as level of motivation, loyalty, pride, and/or intent to stay with the company (Krekel et al., 2019); at the business level, it can entail and be measured as higher productivity, profitability, customer satisfaction or loyalty, and employee turnover (Harter et al., 2002). In general, employee job satisfaction is based on surveys at the individual level and aggregated to the work-unit level, which makes it possible to measure the correlation between job satisfaction and certain business outcomes, such as job turnover and profitability (Dhammika et al., 2012). However, more studies are needed to understand the determinants of job satisfaction in LMICs. For improved corporate image, the literature suggests it can reduce recruitment costs and can improve profitability, particularly in sectors with high visibility in competitive consumer markets (Nyuur et al., 2019; Aqueveque et al., 2018). Baruah and Panda (2020) categorise five different ways in which corporate reputation can be assessed: based on company's behaviour, based on the reflections of business partners and suppliers, based on information disclosures made by the company, based on a company's credibility among broader actors in society, and using an experimental approach (i.e., creating a fictitious company). None of these approaches were found to have been applied to WNP.

ENABLING FACTORS LINKING BETTER NUTRITION WITH BUSINESS OUTCOMES

There is some evidence that firm size, ownership, and labour costs all affect business outcomes. Larger employers are more likely to have more complex or comprehensive workforce programmes in place, while smaller companies often struggle to find resources for such programmes. Constraints for smaller businesses are mainly time and funding related, along with not seeing the business case for such programmes (Taylor et al., 2016). Smaller, more targeted, and lower-cost programmes could increase uptake at smaller companies, but they would still need to be consistent and continuous over a longer period to have a sizeable effect on workers. Tax incentives, re-orientation of work practices, and management support are also needed to enable small businesses to implement workforce initiatives. Specifically on nutrition, most companies (including small local ones as well as larger international ones) lack the expertise to develop or implement WNP and need to rely on external technical support; for smaller companies, such partnerships are less efficient (MQSUN+, 2018).

WNP are most relevant for certain categories of workers (e.g., those with low productivity or habitual absences), workers with a certain socio-economic status (e.g., below the poverty line and thus more likely to be malnourished), and for particular work characteristics (e.g., highly physical work). While larger business benefits are expected to

accompany greater health benefits, this might not always be true: the business case might be stronger where workers are more expensive when absent or difficult to replace. This is rarely the case for more vulnerable workers (Rosen et al., 2007). On the other hand, labour-intensive, relatively low-technology industries such as textiles, agribusiness, construction, and contract services, such as security and cleaning could benefit more from increased productivity and therefore business profitability (Marcus et al., 2021). This is likely to be particularly true of those companies that feel pressure and receive support from an international head office or a committed lead firm in a supply chain.

Other critical issues that influence the business case for WNP are timelines for implementation to generate sufficient health and business outcomes, the quality of programme design, the availability and efficiency of technical support, and the availability of tax incentives and grants. WNP need to be linked to structural components of the workforce environment (e.g., occupational conditions and in-work development). Overall, there is recognition that committed leadership at multiple levels of the company, with active and visible participation of senior managers to support cultural change over time, is needed (Taylor et al., 2016). This entails a culture of worker wellness that is strategically aligned with a business' overall goals, mission, and identity.

CONCLUSIONS

Businesses have an opportunity to improve the health and nutrition of their workforce, as workers spend a significant amount of time at work. However, clear evidence for business benefits, and ideally a positive ROI, are needed to incentivise business leaders to invest in such programmes. Very few studies focus explicitly on the business case for WNP, particularly in the context of LMICs. To help support future research to fill this gap, this paper has explored how evidence on the business case of WNP can be captured, considering impact pathways and both tangible and less-tangible metrics.

Because the baseline and context are important, findings from HICs are unlikely to directly translate to LMICs. Even within LMICs, context and baseline will likely vary between sectors, locations (e.g., rural or urban) and types of workforces. It is thus important to understand how sector characteristics more relevant to LMICs, like labour-intensive sectors in food and manufacturing, influence business outcomes for WNP. Some indicators might not always be relevant for measuring the business case. For example, cost savings from healthcare depend on the national health systems and insurance dynamics, which may be different in LMICs. Finally, for companies in LMICs, the financing and motivation to invest in such programmes may come from overseas lead firms within the supply chain, who seek to build stronger relationships and supplier loyalty. However, there is limited understanding of the business outcomes for lead firms that support WNP at suppliers.

Closing the evidence gap for business benefits of WNP in LMICs could encourage more businesses to invest in workforce health and nutrition and assist them in designing effective programmes to achieve both health and business goals.

REFERENCES

Arsyad, D.S., Nasir, S., Arundhana, A.I., Phan-Thien, K.Y., Toribio, J.A., McMahon, P., Guest, D.I., Walton, M. 2019. 'A one health exploration of the reasons for low cocoa productivity in West Sulawesi'. *One Health*, 26(8).

Aqueveque, C., Rodrigo, P., Duran, I.J. 2018. 'Be Bad but (Still) Look Good: Can Controversial Industries Enhance Corporate Reputation through CSR Initiatives?' *Business Ethics: A European Review* 27 (3): 222–37.

Baruah, L. and Panda, N.M. 2020. "Measuring corporate reputation: a comprehensive model with enhanced objectivity", *Asia-Pacific Journal of Business Administration*, Vol. 12 No. 2, pp. 139-161.

Baxter, S., Sanderson, K., Venn, A.J., Blizzard, C.L., Palmer, A.J. 2014. The Relationship between Return on Investment and Quality of Study Methodology in Workplace Health Promotion Programs. *American Journal of Health Promotion*, 28(6): 347-363.

Bell, E., Taylor, M. 2019. 'Workplace Health: Long-Term Sickness Absence and Capability to Work (NG146)'. Economic modelling report for the updated NICE guidance. National Institute for Health and Care Excellence (NICE).

Collins, J.J., Baase, G.M., Sharda, C.E., Claire, E., Ozminkowski, R.J., Nicholson, S., Billotti, G.M., Turpin, R.S., Olson, M., Berger, M. 2005. 'The assessment of chronic health conditions on work performance, absence and total economic impact for employers.' *Journal of Occupational and Environmental Medicine*, 47: 547-57.

Dhammika, K.A.S., Ahmad, F.B., Sam, T.L. 2012. 'Job satisfaction, commitment and performance: testing the goodness of measures of three employee outcomes.' *South Asian Journal of Management*, 19(2): 7.

Drewnowski, A. 2020. 'Impact of nutrition interventions and dietary nutrient density on productivity in the workplace'. *Nutrition Reviews*, 78(3): 215–224.

Gopaldas, T., Gujral, S. 2003. 'A Multinutrient Package of Iron, Vitamin A, and Iodine Improved the Productivity and Earnings of Women Tea Pickers in South India.' *Food and Nutrition Bulletin*, 24(2): 218-223.

Grimani, A., Aboagye, E., Kwak, L. 2019. 'The effectiveness of workplace nutrition and physical activity interventions in improving productivity, work performance and workability: a systematic review.' *BMC Public Health*, 19(1): 1676.

Harter, J.K., Schmidt, F.L., Hayes, T.L. 2002. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, 87(2): 268–279.

Jensen, J.D. 2011. 'Can worksite nutritional interventions improve productivity and firm profitability? A literature review.' *Perspectives in Public Health*. 131(4): 184-192.

GAIN Briefing Paper n°13

Kigozi, J., Jowett, S., Lewis, M., Barton, P., Coast, J. 2017. 'The Estimation and Inclusion of Presenteeism Costs in Applied Economic Evaluation: A Systematic Review.' *Value in Health*, 20(3): 496-506.

Krekel, C., Ward, G., De Neve J. 2019. 'Employee Wellbeing, Productivity and Firm Performance.' Centre for Economic Performance (CEP) Discussion Paper No 1605. London School of Economics and Political Science, London.

Lawrance, N., Petrides, G., Guerry, M. 2021. 'Predicting employee absenteeism for cost effective interventions.' *Decision Support Systems*, 147, 113539.

Lee, S., Blake, H., Lloyd, S. 2010. 'The price is right: making workplace wellness financially sustainable'. *International Journal of Workplace Health Management*, 3(1): 58-69.

Litwan, K., Tran, V., Nyhan, K., Pérez-Escamilla, R. 2021. 'How do breastfeeding workplace interventions work?: a realist review.' *International Journal for Equity in Health*, 20(1): 148.

Loeppke, R., Taitel, M., Haufle, V., Parry, T., Kessler, R.C., Jinnett, K. 2009. 'Health and productivity as a business strategy: a multiemployer study.' *Journal of Occupational and Environmental Medicine*, 51(4): 411-28.

Marcus, H., Schauer, C., Zlotkin, S. 2021. 'Effect of Anemia on Work Productivity in Both Labor- and Nonlabor-Intensive Occupations: A Systematic Narrative Synthesis.' *Food and Nutrition Bulletin*, 42(2): 289-308.

Marshall, C. 2020. 'Analysis of a comprehensive wellness program's impact on job satisfaction in the workplace.' *International Hospitality Review*, 34(2): 221-241.

Mattke, S., Balakrishnan, A., Bergamo, G., Newberry, S.J. 2011. 'A review of methods to measure health-related productivity loss.' *The American Journal of Managed Care*, 13(4): 211-217.

MQSUN+. 2019. 'Private Sector Engagement in Scaling up Nutrition in the Workforce', Chapter 7 in: Where Business and Nutrition Meet. Review of approaches and evidence on private sector engagement in nutrition.

Nyhus Dhillon, C. & Orteni, F. 2023. Assessing the Impact of Workforce Nutrition Programmes on Nutrition, Health and Business Outcomes: A Review of the Global Evidence and Future Research Agenda. *International Journal for Environmental Research and Public Health*, 20, 5733.

Nyuur, R.B., Ofori, D.F., Amponsah, M. 2019. 'Corporate Social Responsibility and Competitive Advantage: A Developing Country Perspective'. *Thunderbird International Business Review*, 61(4): 551-64.

Osilla, K.C., Van Busum, K., Schnyer, C., Larkin, J.W., Eibner, C., Mattke, S. 2012. 'Systematic review of the impact of worksite wellness programs.' *American Journal of Managed Care*, 18(2): e68-81.

GAIN Briefing Paper n°13

Rosen, S., Feeley, F., Connelly, P., Simon, J. 2007. The private sector and HIV/AIDS in Africa: taking stock of 6 years of applied research. *AIDS*, 21(S3): S41-S51.

Schliemann, D., Woodside, J. 2019. 'The effectiveness of dietary workplace interventions: A systematic review of systematic reviews.' *Public Health Nutrition*, 22(5): 942-955.

Taylor, A.W., Pilkington, R., Montgomerie, A., Feist, H. 2016. 'The role of business size in assessing the uptake of health promoting workplace initiatives in Australia.' *BMC Public Health*, 16: 353.

Vilar-Compte, M., Hernández-Cordero, S., Ancira-Moreno, M., Burrola-Méndez, S., Ferre-Eguiluz, I., Omaña, I. and Pérez Navarro, C. 2021. 'Breastfeeding at the workplace: a systematic review of interventions to improve workplace environments to facilitate breastfeeding among working women.' *International Journal for Equity in Health*, 20(1): 110.

ANNEX 1. OVERVIEW OF REVIEWED SYSTEMATIC REVIEWS

Reference	Intervention	Region	About the study
Anderson et al. (2009)	Workforce Wellness Programmes (including nutrition elements)	HICs	<ul style="list-style-type: none"> - Review focus on programmes that tackle overweight. - No ROI as business benefits were rarely measured in the reviewed studies.
Baicker et al. (2010)	Workforce Wellness Programmes (including nutrition elements)	HICs	<ul style="list-style-type: none"> - Review of measuring business benefits for workforce health programmes. - It found that medical costs fall by about US\$3.27 for every dollar spent on the programmes and that absenteeism costs fall by about US\$2.73 for every dollar spent.
Baxter et al. (2014)	Workforce Health Programmes (including nutrition elements)	HICs	<ul style="list-style-type: none"> - Review of measuring ROI for workforce health programmes. - Twenty of the 51 reviewed studies relate to direct outcomes only, mainly based on medical claims and records. - The weighted mean ROI was 1.38.
Grimani et al. (2019)	Workforce Wellness Programmes (including nutrition elements)	HICs	<ul style="list-style-type: none"> - Review of the evidence on the effectiveness of workplace interventions to address issues of fitness and nutrition. - It mentions evidence of reduced absenteeism and some forms of improved productivity, such as presenteeism. - No ROI.
Haas & Brownlie (2001)	Workplace Nutrition Programmes	HICs & LMICs	<ul style="list-style-type: none"> - Review of the impact of iron supplements on workforce outcomes. - Iron deficiency reduces work productivity observed in field studies which is likely due to anaemia and reduced oxygen transport. - The causality ratings on productivity levels tended to be lower than ratings for the non-economic outcomes. - No ROI.
Jensen (2011).	Workplace Nutrition Programmes	HICs	<ul style="list-style-type: none"> - Review of workforce nutrition programmes measuring economic and productivity outcomes. - The majority of studies provide evidence for positive productivity effects of worksite interventions. - No ROI in most studies.
Lerner et al. (2013)	Workplace Health Promotion Programmes	HICs	<ul style="list-style-type: none"> - Review of the economic impact of worker health promotion programmes. - The evidence is often of low quality and economic impact is limited and inconsistent. - 8 studies claim cost or productivity savings. - ROI cannot be measured, according to the authors, because there are too few methodologically strong studies.
Marcus et al. (2021)	Micronutrients for the workforce	HICs & LMICs	<ul style="list-style-type: none"> - Review of anaemia issues in labour intensive and non-labour intensive sectors in LMICs. - There is strong evidence that anaemia negatively impacts occupational performance and that therapeutic iron interventions can yield substantial productivity gains. - No ROI.
Osilla et al. (2012)	Workforce Wellness Programmes (including nutrition elements)	HICs	<ul style="list-style-type: none"> - Review of business outcomes for workforce wellness programmes. - 8 out of 33 reviewed studies measured health and medical cost savings, with 5 of the 8 studies conducted ROI analyses (between US\$1.65 and US\$6.00 saved for every dollar invested). - Only 4 studies measured absenteeism, which found significant effects, however, measured differently (ROI of US\$15.60 per dollar spent).
Schliemann & Woodside (2019).	Workforce Wellness Programmes (including nutrition elements)	HICs	<ul style="list-style-type: none"> - Review of business outcomes for workforce wellness programmes. - 8 studies estimated work-related outcomes, i.e. productivity, return on investment, health-care costs and sickness/absenteeism.

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			- Only two reviews reported a clear positive change in work-related outcomes as a result of a dietary intervention.
Breastfeeding			
Litwan et al. (2021)	Workforce Breastfeeding Support	HICs & LMICs	<ul style="list-style-type: none"> - Review of 37 studies aimed to uncover underlying mechanisms, determine who benefits the most from interventions. - It finds that in order to be effective, workplace breastfeeding interventions need to: raise awareness of the intervention(s) available among working mothers as well as their work environment, change the workplace culture, foster manager/supervisor support and co-workers support, provide enough time and adequate space and facilities for women to breastfeed or express breastmilk during the workday. - It reveals that more mixed methods work-based breastfeeding intervention research in LMICs is needed.
Tang et al. (2021)	Workforce Breastfeeding Support	HICs & LMICs	<ul style="list-style-type: none"> - Review and meta-analysis on breastfeeding interventions in the USA (10), Turkey (2), Thailand (1) and Taiwan (1). - No randomised controlled trials were found. - It concludes that workplace programmes may be effective in promoting breastfeeding among employees, but there is hardly any evidence of secondary outcomes, such as business benefits.
Taylor et al. (2020)	Workforce Breastfeeding Support	HICs	<ul style="list-style-type: none"> - Review of 27 US studies to understand the variations that exist in accommodations for breastfeeding employees in the United States after it became a federal law to provide such support. - It concludes that workplace breastfeeding support programmes vary by employer, and that employee perceptions of and experiences with workplace lactation support varied by demographic and employment characteristics. - It identified an evidence gap to analyse low-income and minority women with workplace lactation support and associations with business-relevant outcomes.
Vilar-Compte et al. (2021)	Workforce Breastfeeding Support	HICs & LMICs	<ul style="list-style-type: none"> - Review of 37 studies showing that workplace interventions help increase the duration of breastfeeding and prevent early introduction of breastmilk substitutes. - Having a lactation space, breastmilk extraction breaks, and organizational policies are key strategies. - This study did not cover the business benefits, the insight about the importance of a supportive environment is relevant and it recognises that job satisfaction is an important but ignored outcome level in studies.

ANNEX 2. OVERVIEW OF REVIEWED STUDIES ON SPECIFIC INTERVENTIONS

Reference	Country	Sector	Company	Intervention	Indicators	ROI
Berry et al. (2010)	USA	Multiple	Multiple companies	Workplace Wellness Programme	Health cost savings, productivity, voluntary turnover rate	Yes
Caloyeras et al. (2014)	USA	Food	One company	Workplace Wellness Programme	Healthcare cost savings	Yes
Gopaldas et al. (2003)	India	Agriculture	One tea plantation	Workforce Nutrition Programme	Productivity of women workers.	No
Gowrisankaran et al. (2013)	USA	Health	One company	Workplace Wellness Programme	Healthcare cost savings	No
Gubler et al. (2017)	USA	Laundry	Multiple companies	Workplace Wellness Programme	Productivity	Yes
Jones et al. (2019)	USA	Higher education	One company	Workplace Wellness Programme	Healthcare cost savings, absenteeism, productivity	Yes
Kumar et al. (2009)	USA	Security	One company	Workforce Nutrition Programme	Productivity	No
Lee et al. (2010)	UK	Health	One company	Workplace Wellness Programme	Absenteeism (days per capita), voluntary turnover rate	No
Marshall (2020)	USA	Hospitality	One company	Workplace Wellness Programme	Job satisfaction	No
Merrill et al. (2011)	USA	Public services	One company	Workplace Wellness Programme	Health care costs	Yes
Milani & Lavie (2009)	USA	Manufacturing	One company	Workplace Wellness Programme	Medical claim costs	Yes
Plotnikoff et al. (2012)	USA	Health	One company	Workforce Nutrition Programme	Presenteeism	No
Qaiser et al. (2018)	Pakistan	Public services	Multiple companies	Workplace Wellness Programme	Productivity (employee and firm productivity)	No
Song & Baicker (2019)	USA	Retail	One company	Workplace Wellness Programme	Healthcare costs, Absenteeism, Work performance	No
Breastfeeding						
Bai et al. (2011)	USA	Multiple sectors	Multiple companies	Workforce Breastfeeding Support	Job satisfaction; Staff retention	No
Brown et al. (2001)	USA	Multiple sectors	Multiple companies	Workforce Breastfeeding Support	N/A	No
Cohen et al. (1995)	USA	Multiple sectors	Two companies	Workforce Breastfeeding Support	Absenteeism	No
Del Bono & Prozato (2022)	UK	Multiple sectors	Multiple companies	Workforce Breastfeeding Support	Absenteeism	No

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Jantzer et al. (2018)	USA	Multiple sectors	Multiple companies	Workforce Breastfeeding Support	Job satisfaction	No
Scott et al. (2019)	USA	Health	Multiple companies	Workforce Breastfeeding Support	Job satisfaction	No
Soomro et al. (2016)	Pakistan	Multiple sectors	Multiple companies	Workforce Breastfeeding Support	Absenteeism	No
Waite and Christakis (2015)	USA	Multiple sectors	Two companies	Workforce Breastfeeding Support	Job satisfaction	No

ANNEX 3. LIST OF ALL 36 REVIEWED STUDIES

Anderson, L.M., Quinn, T.A., Glanz, K. et al. 2009. 'The effectiveness of worksite nutrition and physical activity interventions for controlling employee overweight and obesity: a systematic review.' *American Journal of Preventive Medicine*, 37: 340–357.

<https://doi.org/10.1016/j.amepre.2009.07.003>

Bai, Y., Wunderlich, S.M., Weinstock, M. 2011. 'Breastfeeding-friendly workplace: are employers ready?' *The FASEB Journal*, 25(S1): 211.8.

https://doi.org/10.1096/fasebj.25.1_supplement.211.8

Baicker, K., Cutler, D., Song, Z. 2010. 'Workplace Wellness Programs Can Generate Savings'. *Health Affairs*, 29(2). <https://doi.org/10.1377/hlthaff.2009.0626>

Baxter, S., Sanderson, K., Venn, A.J., Blizzard, C.L., Palmer, A.J. 2014. The Relationship between Return on Investment and Quality of Study Methodology in Workplace Health Promotion Programs. *American Journal of Health Promotion*, 28(6): 347-363.

<https://doi.org/10.4278/ajhp.130731-LIT-395>

Berry, L.L., Mirabito, A.M., Baun, W.B. 2010. 'What's the Hard Return on Employee Wellness Programs?' *Harvard Business Review*, December 2010. Retrieved in November 2022 from:

<https://hbr.org/2010/12/whats-the-hard-return-on-employee-wellness-programs>

Brown, C.A., Poag, S., Kasprzycki, C. 2001. Exploring Large Employers' and Small Employers' Knowledge, Attitudes, and Practices on Breastfeeding Support in the Workplace. *Journal of Human Lactation*, 17(1): 39-46. <https://doi.org/10.1177/089033440101700108>

Caloyeras, J.P., Liu, H., Exum, E., Broderick, M., Mattke, S. 2014. 'Managing Manifest Diseases, But Not Health Risks, Saved PepsiCo Money Over Seven Years.' *Health Affairs*, 33(1).

<https://doi.org/10.1377/hlthaff.2013.0625>

Cohen, R., Mrtek, M. B., Mrtek, R. G. 1995. 'Comparison of maternal absenteeism and infant illness rates among breastfeeding and formula-feeding women in two corporations.'

American Journal of Health Promotion, 10(2): 148–153. <https://doi.org/10.4278/0890-1171-10.2.148>

Del Bono, E., Pronzato, C.D. 2022. 'Does breastfeeding support at work help mothers, children, and employers at the same time?' *Journal of Demographic Economics*. 1–28.

<https://doi.org/10.1017/dem.2022.23>

Gopaldas, T., Gujral, S. 2003. 'A Multinutrient Package of Iron, Vitamin A, and Iodine Improved the Productivity and Earnings of Women Tea Pickers in South India.' *Food and Nutrition Bulletin*, 24(2): 218-223. <https://doi.org/10.1177/156482650302400215>

Gowrisankaran, G., Norberg, K., Kymes, S., Chernew, M.E., Stwalley, D., Kemper, L., Peck, W. 2013. 'A Hospital System's Wellness Program Linked To Health Plan Enrollment Cut Hospitalizations But Not Overall Costs.' *Health Affairs*, 32(3).

<https://doi.org/10.1377/hlthaff.2012.0090>

Grimani, A., Aboagye, E., Kwak, L. 2019. 'The effectiveness of workplace nutrition and physical activity interventions in improving productivity, work performance and

GAIN Briefing Paper n°13

workability: a systematic review.' *BMC Public Health*, 19(1): 1676.

<https://doi.org/10.1186/s12889-019-8033-1>

Gubler, T., Larkin, I., Pierce, L. 2017. 'Doing Well by Making Well: The Impact of Corporate Wellness Programs on Employee Productivity.' *Management Science*, 64(11): 4967-4987.

<https://doi.org/10.1287/mnsc.2017.2883>

Haas, J.D., Brownlie, T. 2001. 'Iron Deficiency and Reduced Work Capacity: A Critical Review of the Research to Determine a Causal Relationship.' *The Journal of Nutrition*, 131(2): 676S-690S <https://doi.org/10.1093/jn/131.2.676S>

Jantzer, A. M., Anderson, J., and Kuehl, R. A. 2018. 'Breastfeeding support in the workplace: The relationships among breastfeeding support, work-life balance, and job satisfaction.'

Journal of Human Lactation, 34(2): 379-385. <https://doi.org/10.1177/0890334417707956>

Jensen, J.D. 2011. 'Can worksite nutritional interventions improve productivity and firm profitability? A literature review.' *Perspectives in Public Health*. 131(4): 184-192.

<https://doi.org/10.1177/1757913911408263>

Jones, D., Molitor, D., Reif, J. 2019. 'What do Workplace Wellness Programs do? Evidence from the Illinois Workplace Wellness Study.' *The Quarterly Journal of Economics*, 134(4): 1747-1791.

<https://doi.org/10.1093/qje/qjz023>

Kumar, S., McCalla, M., Lybeck, E. 2009. 'Operational impact of employee wellness programs: a business case study.' *International Journal of Productivity and Performance Management*, 58(6), 581-597. <https://doi.org/10.1108/17410400910977109>

Lee, S., Blake, H., Lloyd, S. 2010. 'The price is right: making workplace wellness financially sustainable'. *International Journal of Workplace Health Management*, 3(1): 58-

69. <https://doi.org/10.1108/17538351011031948>

Lerner, D., Rodday, A.M., Cohen, J.T., Rogers, W.H. 2013. 'A systematic review of the evidence concerning the economic impact of employee-focused health promotion and wellness programs.'

Journal of Occupational and Environmental Medicine, 55: 209-222.

<https://doi.org/10.1097/JOM.0b013e3182728d3c>

Litwan, K., Tran, V., Nyhan, K., Pérez-Escamilla, R. 2021. 'How do breastfeeding workplace interventions work?: a realist review.' *International Journal for Equity in Health*, 20(1):148.

<https://doi.org/10.1186/s12939-021-01490-7>

Marcus, H., Schauer, C., Zlotkin, S. 2021. 'Effect of Anemia on Work Productivity in Both Labor- and Nonlabor-Intensive Occupations: A Systematic Narrative Synthesis.' *Food and Nutrition Bulletin*, 42(2): 289-308. <https://doi.org/10.1177/03795721211006658>

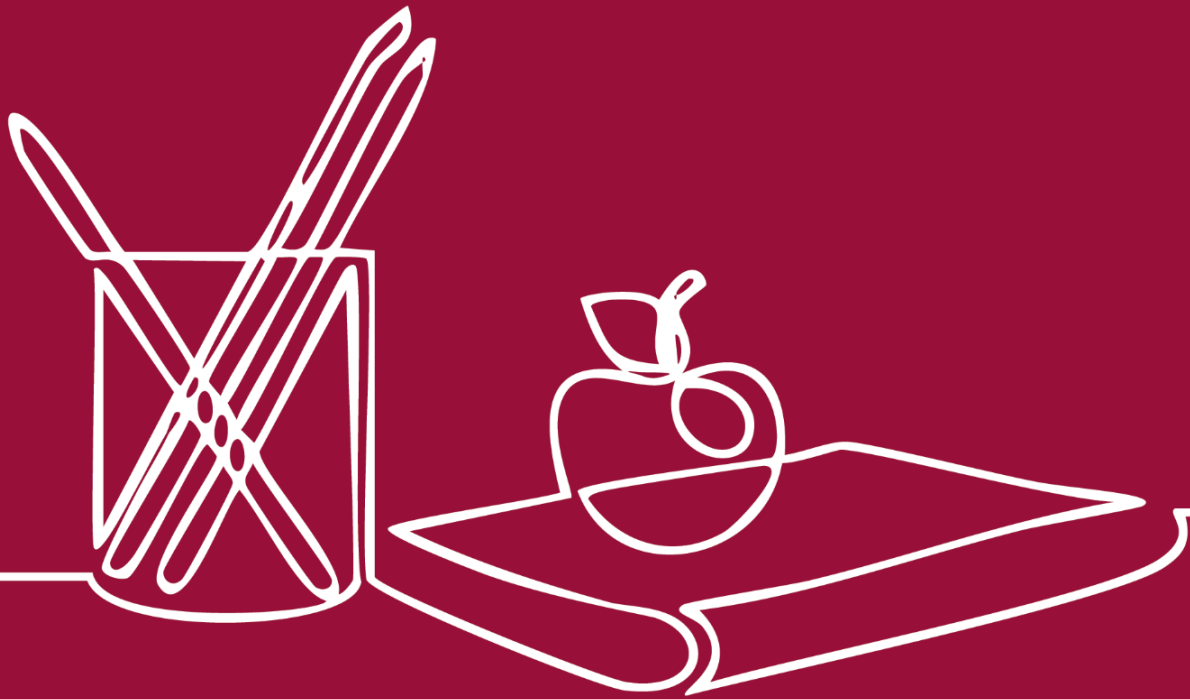
Marshall, C. 2020. 'Analysis of a comprehensive wellness program's impact on job satisfaction in the workplace.' *International Hospitality Review*, 34(2): 221-241.

<https://doi.org/10.1108/IHR-05-2020-0014>

Merrill, R.M., Hyatt, B., Aldana, S.G., Kinnersley, D. 2011. 'Lowering employee health care costs through the Healthy Lifestyle Incentive Program.' *Journal of Public Health Management and Practice*, 17(3): 225-232. <https://doi.org/10.1097/PHH.0b013e3181f54128>

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- Milani, R.V., Lavie, C.J. 2009. 'Impact of worksite wellness intervention on cardiac risk factors and one-year health care costs.' *American Journal of Cardiology*, 104(10): 1389-1392. <https://doi.org/10.1016/j.amjcard.2009.07.007>
- Osilla, K.C., Van Busum, K., Schnyer, C., Larkin, J.W., Eibner, C., Mattke, S. 2012. 'Systematic review of the impact of worksite wellness programs.' *American Journal of Managed Care*, 18(2): e68-81.
- Plotnikoff, G.A., Finch, M.D., Dusek, J.A. 2012. 'Impact of Vitamin D Deficiency on the Productivity of a Health Care Workforce.' *Journal of Occupational and Environmental Medicine*, 54(2): 117-121. <https://doi.org/10.1097/JOM.0b013e318240df1e>
- Qaisar, M., Mariam, S., Ahmad, F. 2018. 'Employee Wellness as Predictor of Productivity from Public Sector Management Perspectives: Conditional Process Analysis.' *International Journal of Business & Management*, 13(2). [https://www.numl.edu.pk/journals/subjects/1561533292Volume%2013%20\(2\)%20Article-127.pdf](https://www.numl.edu.pk/journals/subjects/1561533292Volume%2013%20(2)%20Article-127.pdf)
- Schliemann, D., Woodside, J. 2019. 'The effectiveness of dietary workplace interventions: A systematic review of systematic reviews.' *Public Health Nutrition*, 22(5): 942-955. <https://doi.org/10.1017/S1368980018003750>
- Scott, V. C., Taylor, Y. J., Basquin, C., Venkitesubramanian, K. 2019. 'Impact of key workplace breastfeeding support characteristics on job satisfaction, breastfeeding duration, and exclusive breastfeeding among health care employees.' *Breastfeeding Medicine*, 14(6), 416– 423. <https://doi.org/10.1089/bfm.2018.0202>
- Song, Z., Baicker, K. 2021. 'Effect of a Workplace Wellness Program on Employee Health and Economic Outcomes. A Randomized Clinical Trial.' *Journal of the American Medical Association*, 321(15): 1491-1501. <https://doi.org/10.1001/jama.2019.3307>
- Soomro, J.A., Shaikh, Z.N., Saheer, T.B., Bijarani, S.A. 2016. 'Employers' perspective of workplace breastfeeding support in Karachi, Pakistan: a cross-sectional study.' *International Breastfeeding Journal*, 11(1): 24. <https://doi.org/10.1186/s13006-016-0084-7>
- Tang, X., Patterson, P., MacKenzie-Shalders, K., Van Herwerden, L.A., Bishop, J., Rathbone, E., Honeyman, D. and Reidlinger, D.P. 2021. 'Workplace programmes for supporting breastfeeding: a systematic review and meta-analysis.' *Public Health Nutrition*, 24(6): 1501-1513. <https://doi.org/10.1017/S1368980020004012>
- Taylor, Y.J., Scott, V.C., Connor, D.C. 2020. 'Perceptions, Experiences, and Outcomes of Lactation Support in the Workplace: A Systematic Literature Review.' *Journal of Human Lactation*, 36(4): 657–672. <https://doi.org/10.1177/0890334420930696>
- Vilar-Compte, M., Hernández-Cordero, S., Ancira-Moreno, M., Burrola-Méndez, S., Ferre-Eguiluz, I., Omaña, I. and Pérez Navarro, C. 2021. 'Breastfeeding at the workplace: a systematic review of interventions to improve workplace environments to facilitate breastfeeding among working women.' *International Journal for Equity in Health*, 20(1):110. <https://doi.org/10.1186/s12939-021-01432-3>
- Waite, W. M., Christakis, D. 2015. 'Relationship of maternal perceptions of workplace breastfeeding support and job satisfaction.' *Breastfeeding Medicine*, 10(4): 222–227. <https://doi.org/10.1089/bfm.2014.0151>



ABOUT GAIN

The Global Alliance for Improved Nutrition (GAIN) is a Swiss-based foundation launched at the UN in 2002 to tackle the human suffering caused by malnutrition. Working with governments, businesses and civil society, we aim to transform food systems so that they deliver more nutritious food for all people, especially the most vulnerable.

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The Global Alliance for Improved Nutrition

Rue de Varembé 7 1202 | Geneva | Switzerland | info@gainhealth.org

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