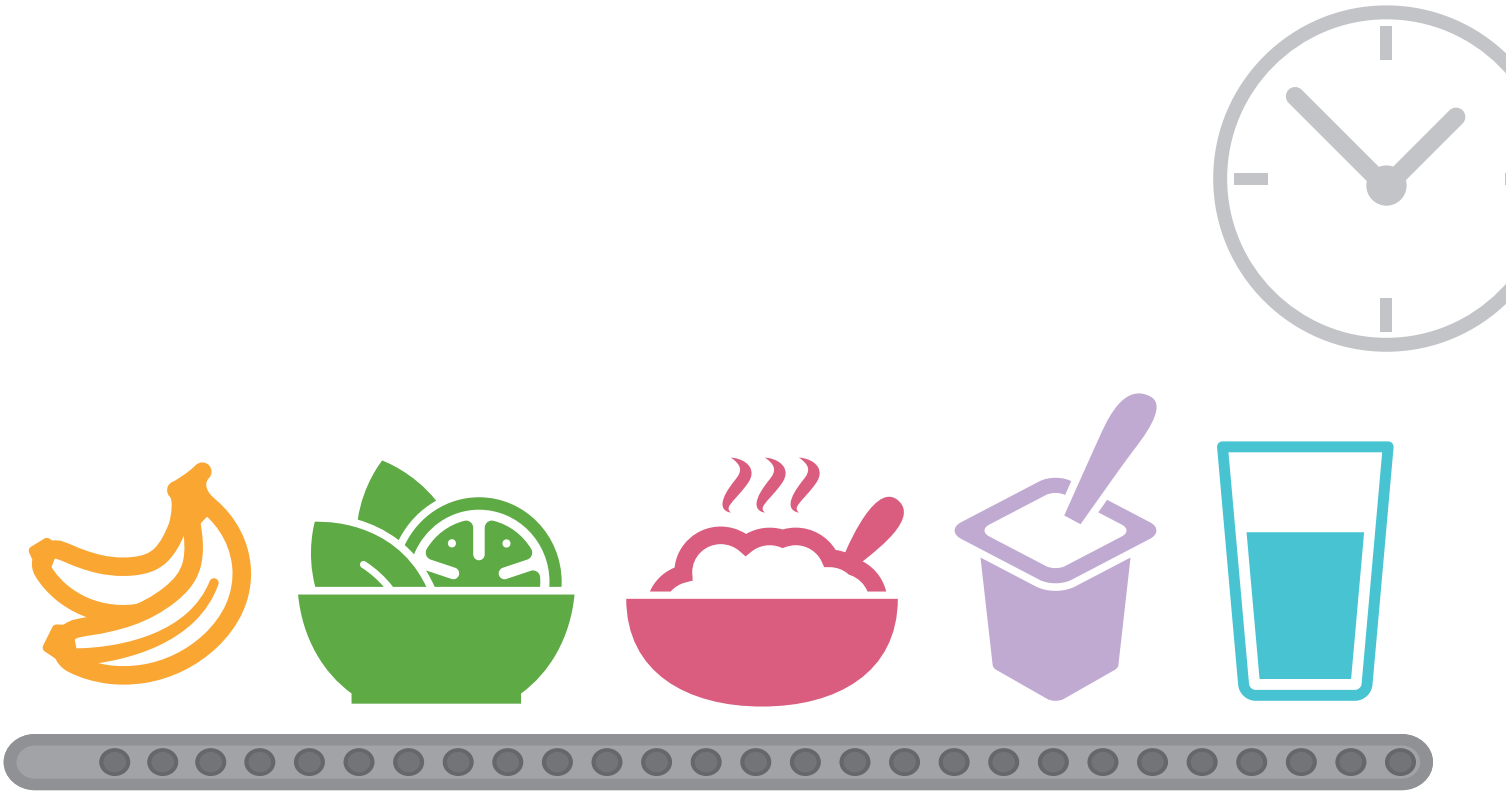
BDA The Association of UK Dietitians

White Paper

BDA Work Ready Programme

Supporting healthier working lives through dietitian-led wellness initiatives



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BelVita

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Research Team

Elaine Gardner and Kathy Cowbrough conducted the initial literature review to support the development of this document.

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Welcome

Lord Balfe of Dulwich
Honorary President of the BDA

During my time as Envoy to the trade union movement for the Conservative Party I arranged many meetings between union officials and politicians to help us understand each other's concerns.

Whilst the topics of discussion were varied, many of the shared interests related to productivity. Economic productivity is a key priority for any government and when looking at productivity in the workforce, there are many factors at play including work-life balance, safety and job security. But staff wellness is not a 'soft' issue for employers or trade unions – there is a direct interplay between the hard hitting topics of negotiation and the ability of workers to reach their productive potential.

During my time working with the BDA, and more recently as their Honorary President, I have been determined to get across that dietitians are highly trained professionals. BDA members are not part of the lifestyle industry but part of a registered profession that delivers improved health. If you are trying to make the case for investing in a healthy eating programme to support the wellbeing of staff which links to productivity, this BDA White Paper *Supporting healthier working lives through dietitian-led wellness initiatives* clearly shows the effectiveness of such interventions and provides advice on what a good programme looks like.

I would encourage you to take the time to review this document and follow the BDA's journey with workplace health as it evolves during the next two years.

Suzanne Rastrick
Chief Allied Health Professions Officer, NHS England

I was appointed by NHS England in 2014 to lead, develop and promote the role of all Allied Health Professionals (AHPs) to service and workforce commissioners. Shortly afterwards the *Five Year Forward View* document was published – a shared vision for the future of the NHS – which made core arguments around three principle areas, including a radical upgrade in the prevention agenda to bridge the health and wellbeing gap.

Last month at Expo15, Simon Stevens, Chief Executive of NHS England announced a £5m initiative to support wellbeing initiatives for NHS staff after saying that "the NHS has got to lead by example in helping our own staff and hopefully other employers will follow suit". It goes without saying that there are a number of challenges whilst introducing wellbeing initiatives to an organisation as complicated and vast as the NHS, but it is important that, as one of the largest employers in the world, we recognise the benefits of investing in a workplace health and wellbeing strategy.

We must empower staff to make choices that will benefit their lives and, as such, the lives of their patients and the wider community. Commissioners are considering what citizens want from their healthcare services and it is clear that these 'citizen outcomes' go beyond traditional NHS boundaries – the real drivers of a happy and healthy life include income, employment, family and physical/mental health. Utilising the influence of employers to develop targeted health and wellbeing strategies are recognised as a key part of tackling health inequalities.

Simon Stevens has set out how NHS organisations will be supported to help their staff to stay well, including serving healthier food, promoting physical activity, reducing stress, and providing health checks covering mental health and musculoskeletal problems – the two biggest causes of sickness absence across the NHS. There are roles for dietitians to demonstrate some of the fundamentals of their skills – innovation and entrepreneurship – to get involved in the delivery of this initiative.

Over the next year, the BDA Work Ready Programme will provide a range of tools to support its members – including assessment tools for organisations, some benchmarking and shared outcome measures, resources and training materials. In the meantime, you can start having conversations within your own organisations and this paper *Supporting healthier working lives through dietitian-led wellness initiatives* gives you the evidence you will need to demonstrate how you make a difference in shaping and delivering initiatives to help colleagues and other employees make healthier food and drink choices at work.

I encourage all BDA members – whether they work in private practice, local authority or the NHS – to seize the opportunity this latest programme from the BDA provides which aims to demonstrate the value of the dietetic workforce in health promotion and evidence-based practice.

Executive Summary

The health of the UK workforce is at the heart of a raft of new government policies and guidelines, including the NHS Five Year Forward View[1] and the public health guidance for the workplace from the National institute for Health and Care Excellence (NICE).[2]

Up to 25% of the UK's working age population suffer from a long-term condition which can be weight-related[3], and employers are looking to support the productivity of their workforce through improved resilience and mental wellbeing. This has led a timely review by the British Dietetic Association (BDA) on the evidence on wellness initiatives which encourage better nutritional practices.

It is well accepted that organisations benefit from investing in the wellbeing of their employees, and experts who commission employee wellbeing programmes are increasingly looking for effective solutions. Dietitians are the 'Gold Standard' when it comes to nutrition and food professionals. As the only qualified health professionals that assess, diagnose and treat dietary and nutritional problems at an individual and wider public health level, they have the skills to effect positive behaviour change for a workforce in partnership with an employer.

This paper identifies how good nutrition and hydration, alongside being active, keeps the UK workforce healthy and how initiatives can be integrated into programmes which have a positive ethos of health promotion. The key message to employers is that supporting regular eating patterns and a quality diet for workers can improve overall wellness, driving productivity and reducing sickness absence statistics.

Three key clinical conditions have been considered in the BDA review – overweight/obesity, musculoskeletal conditions, and mood disorders such as depression and anxiety. There is evidence that good nutritional care can help prevent and manage these conditions. Given that if we work full time, what we eat generally provides at least 60% of our total daily intake in an average working day; workplace nutrition has the potential to significantly impact on our health.

Most policy and business documents looking at wellbeing do not separate out nutrition interventions from other health-related interventions, but the BDA review has identified some quality studies which do offer more specific insights:

- Up to 10% of sick leave and higher levels of productivity loss at work may be attributed to lifestyle behaviours and obesity.
- Workplace health interventions may improve productivity by 1-2% which is likely to more than offset the costs of implementing interventions. Employees that are obese take an average of four extra days sick per year[2] and in a company employing 1000 people, this could mean a loss of more than £126,000 a year in lost productivity.[3]

It is well accepted that organisations benefit from investing in the wellbeing of their employees

1 NHS Five Year Forward View, NHS England 2014 http://www.england.nhs.uk/ourwork/futurenhs/
2 Workplace policy and management practices to improve the health and wellbeing of employees, NICE 2015 https://www.nice.org.uk/guidance/ng13.
3 Long Term Conditions Compendium of Information: Third Edition, Department of Health 2012.

- Obesity is strongly associated with sickness absence in the workplace. Maintaining a normal weight gives the lowest risk for sickness absence and the BDA review found that weight loss, weight gain and stable obesity increased the risk for sickness absence spells of all lengths.[4,5]
- It has been speculated that presenteeism costs UK workplaces £15bn per year, compared to around £8bn for absenteeism.[6] Employees with musculoskeletal and other (chronic) health conditions report higher rates of absenteeism and presenteeism than workers without such conditions. Good nutritional care can improve outcomes for these workers.
- The BDA review found limited evidence in the scientific literature with regards to nutrition-related health behaviour changes and accidents, but there are indications that eating breakfast can have a positive influence.
- There is growing evidence to suggest that good nutrition is just as important for mental health as it is for physical health and that a number of conditions, including depression, may be influenced by dietary factors.[7] Assisting people to effectively manage stress will have a positive impact on the ability to control both mood and weight.

Obesity is a multi-factoral condition, influenced by environment as well as personal nutrition choices. In terms of the work setting, a recently published overview of the support for evidence-based lifestyle interventions in the workplace for weight-related outcomes[8] favoured multi-component interventions which focussed on both physical activity and nutrition over single dietary programmes.

The BDA review examined the evidence concerning nutrition and physical activity interventions in workplaces for controlling employee overweight and obesity. Interventions achieved improvements in employee weight (reductions of 3 pounds or 1.4 kg) and a decrease in BMI of up to 0.5 kg/m2. There was a greater reduction in body weight when the intervention also looked at the environment in the workplace (i.e. vending/canteens). While these reductions may seem small, they indicate a successful maintenance and loss in weight and BMI, rather than an increase. A reduction of only 5% body weight has positive effects on health.[9]

Some other notable results were:

- Adequate hydration and regular eating patterns can support staff in accurate decision-making and help prevent lower concentration levels, fatigue and anxiety.

4 Roos E, Laaksonen M, Rahkonen O (2014) Weight change and sickness absence - a prospective study among middle-aged employees. Eur J Pub Health; 25 (2): 263–7.
5 VanWormer JJ, Linde JA, Harnack LJ (2012) Weight change and workplace absenteeism in the Healthworks study. Obes Facts; 5 (5): 745-52.
6 IIP (Investors in People) (2014) 9 tips for countering presenteeism in the workplace. Available from: http://www.investorsinpeople.co.uk/resources/ideas/9-tips-countering-presenteeism-workplace.
7 Gatineau M, Dent M (2011) Obesity and Mental Health. Oxford: National Obesity Observatory.
8 Schröer S, Haupt J, Pieper C (2014) Evidence-based lifestyle interventions in the workplace—an overview. Occup Med (Lond); 64(1): 8-12.
9 Blackburn G (1995) Effect of degree of weight loss in health benefits. Obesity Research 3: 211S-216S.

- Shift workers are at increased risk of developing obesity,[10] metabolic syndrome[11] and type 2 diabetes.[12] This is in addition to a previously known association with ischaemic cardiovascular disorders.
- Working long hours (>8 hours per day) and regular overtime was found in one office-based study to increase the risk for developing type 2 diabetes.[13] While the reasons for this increased risk were not identified, it is more common to have poorer eating habits and increased stress due to regularly working long hours.

The review also looked at the design of programmes and found that both individual counselling and group sessions are beneficial, and that behaviour change strategies in which dietitians are experts (such as motivational interviewing, cognitive behavioural therapy, nudge) are effective in a workplace setting. The studies reviewed also showed that nutrition interventions sit well alongside other wellness programmes.

The key aspects of a good nutrition intervention include:

- employees are involved in planning and delivering the intervention (through needs assessments and/or a team approach such as staff-side champions for example)
- senior management are consulted on the planning of an intervention as well as being visibly committed to the intervention
- multi-level approaches work best (for example group workshops alongside changes in the catering provision)
- electronic methods are extremely useful in delivering and supporting an intervention, but can be more effective if there is also face to face contact (for example prompts via email following a tasting session, or the provision of an electronic food and drink diary after a question and answer session on the importance of breakfast)
- physical activity combined with dietary approaches is more effective in weight management than as single components
- delivery – a mixture of types of activities shows better success rates
- people do not like being told what to do – behaviour modification strategies are important for behaviour change.

10 Kubo T, Oyama I, Nakamura T et al (2011) Retrospective cohort study of the risk of obesity among shift workers: findings from Industry based Shift Workers Health Study, Japan. Occ Envir Med; 68(5):327-31.
11 Pietroiusti A, Neri A, Somma G et al (2010) Incidence of metabolic syndrome among night shift healthcare workers. Occup Environ Med; 67: 54-57.
12 Gan Y, Yang C, Tong X et al (2015) Shift work and diabetes mellitus: a meta-analysis of observational studies. Occup Environ Med; 72: 72-78.
13 Nakanishi N, Nishina K, Yoshida H et al (2001) Hours of work and the risk of developing impaired glucose or type 2 diabetes mellitus in Japanese male office workers. Occup Environ Med; 58(9):569-74.

The BDA is also able to make recommendations on the structural requirements for a good nutrition intervention in the workplace:

- a follow-up period is recommended to be more than one year to accurately measure long-term impact
- avoid periods of large restructure or busy periods (e.g. Christmas in retail)
- workplace champions can be a useful asset with appropriate training
- online and face-to-face elements together are beneficial
- interventions can be as a group or individual for workers
- planning is crucial: a needs assessment and employee engagement is an essential first step
- outcome measures should be agreed and reported on by providers.

Finally the BDA can offer advice on key barriers and enablers for successful nutrition interventions:

- make use of existing engagement channels, in particular trade union health and safety committees or employee benefit teams
- take gender and culture into account
- allow time for the wellness programme within work time
- cultural – working through breaks, working long hours
- facilities – no onsite canteen/eating place, outsourced canteen
- lack of targeting of the intervention due to poor initial needs assessment
- communicate results to managers and staff.

Conclusion

The findings can be categorised into four key themes:

1. Better business through positive leadership and commitment to health.
2. Keeping healthy people at work and increasing their productivity potential whilst there.
3. Working together to achieve a healthy weight for wellness.
4. Maintaining a healthy environment and culture within the workplace.

It is right that workers should take responsibility for their individual healthy habits, but some unhealthy practices can be influenced by the environment. Small 'nudges' can create behaviour change and improve health. When implemented by experts using a validated model, behaviour change techniques can be effectively used across organisations to reduce healthcare costs, improve productivity and reduce absenteeism.

The BDA is offering a new BDA Work Ready Programme focussing on maintaining employees at a healthy weight which is linked to the risk reduction of a wide range of a preventable ill health issues.

Visit **www.bdaworkready.co.uk** for more information.

Find out more:

WORK READY!

bdaworkready.co.uk

Introduction

The British Dietetic Association (BDA) is the professional body for UK dietitians.

Our 8000 members work across public health, clinical and health promotion roles in a variety of settings. The breadth of the profession means that dietitians provide support to meet the nutritional needs for a wide range of population groups. The BDA Chairman has recognised that workplace health programmes benefit employees and employers in the development of a healthier workforce and has nominated workplace health as her theme of office for 2015-2017. Dietitians have a key role in supporting existing workplace health and working with teams in developing workplace programmes to meet identified needs.

The BDA is offering a new BDA Work Ready Programme focussing on maintaining employees at a healthy weight which is linked to the risk reduction of a wide range of a preventable ill health issues. Up to 25% of the working age population in the UK suffer from one long-term condition which can be weight-related such as heart disease related to hypertension, diabetes, obesity, musculoskeletal disorders, and depression.[14] Over half of people with a long-term condition say that their health is a barrier to the type or amount of work they can do, rising to over 80% when someone has three or more conditions,[15] so experts who commission employee wellbeing programmes are increasingly looking for solutions which target this issue.

In addition, the health of the UK workforce is at the heart of a raft of new government policies and guidelines, including the NHS Five Year Forward View[16] and the public health guidance for the workplace from the National institute for Clinical Excellence (NICE).[17] NICE calculates that there are significant workplace costs associated with obesity-related ill health in the workplace for the employer – for an organisation employing 1000 people, this could equate to more than £126,000 a year in lost productivity due to a range of issues including back and sleep problems.[18]

Background to the BDA Work Ready Programme development

It is well accepted that organisations benefit from investing in the wellbeing of their employees, and those who are asked to commission these services rightly demand evidence of efficacy. So what is the evidence to support wellness initiatives which encourage good nutritional practices? And how can dietitians effect positive behaviour change for a workforce to help improve resilience and mental wellbeing?

The BDA has conducted a review of published peer-reviewed evidence of workplace wellbeing studies involving nutrition in order to present findings on effective interventions. The BDA Work Ready Programme is being developed based on this evidence-based research so that employers commissioning this programme can be confident that it will achieve its stated outcomes and return on investment.

The key message to employers is that supporting regular eating patterns for workers can improve overall wellness, driving productivity.

14 Long Term Conditions Compendium of Information: Third Edition, Department of Health 2012.
15 Labour Force Survey, 2009.
16 NHS Five Year Forward View, NHS England 2014 http://www.england.nhs.uk/ourwork/futurenhs/
17 Workplace policy and management practices to improve the health and wellbeing of employees, NICE 2015 https://www.nice.org.uk/guidance/ng13.
18 NICE (2015) Workplace health: Costs and savings. Available from: http://publications.nice.org.uk/workplace-health-lgb2/costs-and-savings.

This paper identifies how good nutrition and hydration, alongside being active, keep the UK workforce healthy and how initiatives can be integrated into programmes which have a positive ethos of health promotion.

Dietitians, other healthcare professionals and those commissioning employee benefits will be able to use this paper to make the case for funding and implementing evidence-based nutrition in the workplace programmes, alongside existing services which empower employees.

Maintaining a healthy weight is one of the most important modifiable diet and lifestyle-related factor in preventing a range of non-communicable diseases such as diabetes, heart disease related to hypertension and raised blood lipids, chronic obstructive pulmonary disease, and depression. Three key clinical conditions have been considered in this review – overweight/obesity, musculoskeletal conditions and mood disorders such as depression and anxiety. There is evidence that good nutritional care can help prevent and manage these conditions. Eating well during our working life supports workers to maintain a healthy weight and stay healthy so that businesses have a reliable workforce who are well enough to do their jobs, but also feel valued, supported and engaged.

The BDA Work Ready Programme offers bespoke nutritional and wellness services tailored to employers' needs. A 'pick and mix approach' affords businesses the opportunity to choose the level of support that they need as required. Whether it is a full Work Ready Programme or elements of the programme to be combined with existing services, employers can be assured that they are receiving a quality-assured service, soundly based in scientific research and principles, provided by dietitians, specifically trained in workplace nutrition.

Choosing the right source of help and advice can sometimes be a confusing task. Many people claim to be experts in nutrition yet do not work in an evidenced based way and are unregulated and so offer little protection to the public.

Dietitians are the 'Gold Standard' when it comes to nutrition and food professionals.

Registered Dietitians are the only qualified health professionals that assess, diagnose and treat dietary and nutritional problems at an individual and wider public health level. They work with both healthy and sick people. Uniquely, dietitians use the most up-to-date public health and scientific research on food, health and disease which they translate into practical guidance to enable people to make appropriate lifestyle and food choices. Dietitians are also the only nutrition professionals to be regulated by law, and are governed by an ethical code to ensure that they always work to the highest standard.

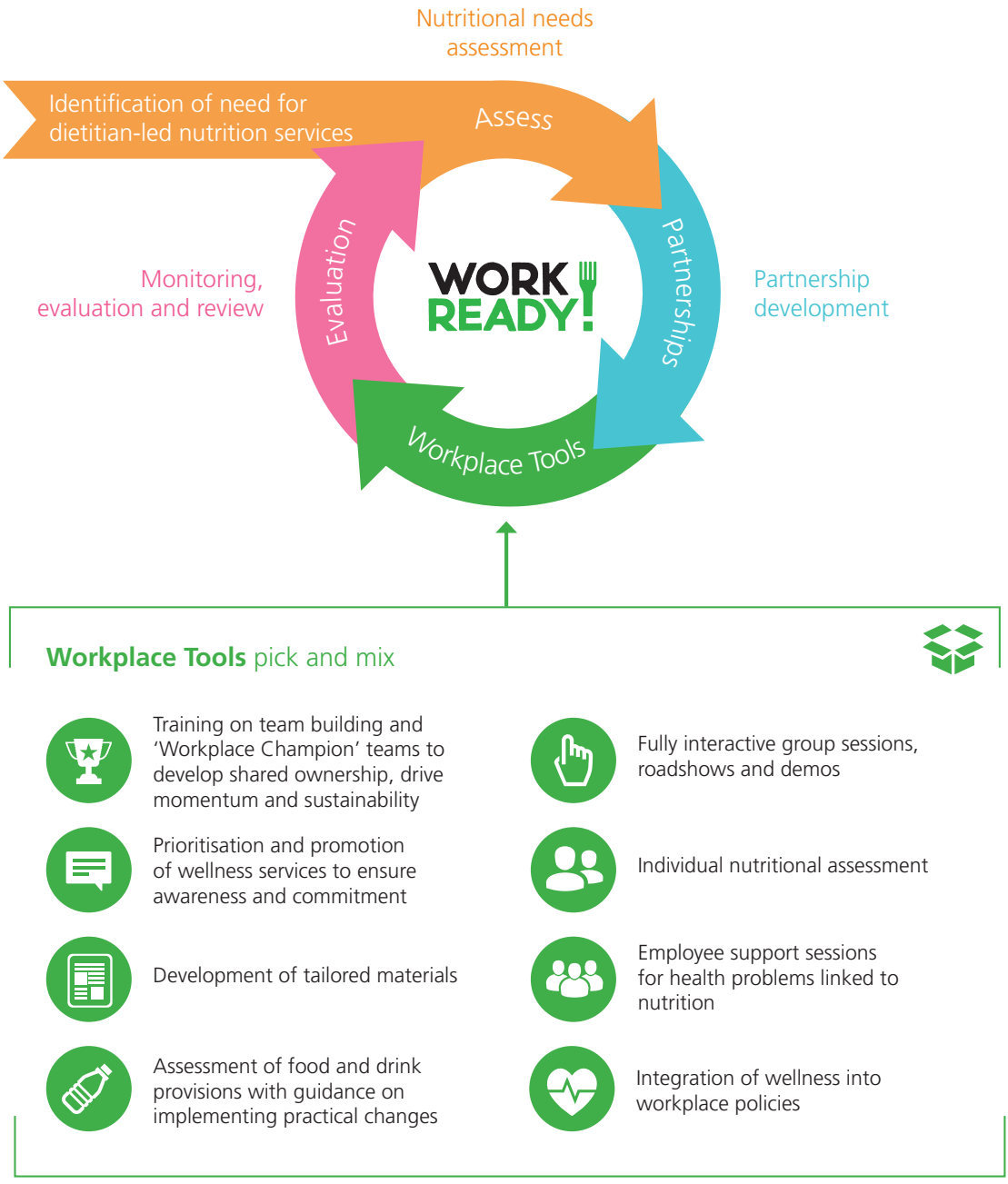
The Trust a Dietitian campaign aims to highlight the importance of choosing a dietitian and the very big differences between dietitians, nutritionists, nutritional therapists and, so-called, diet 'experts'.

See www.trustadietitian.co.uk for more information.

The BDA Work Ready programme is provided by professional experts, specifically trained in workplace nutrition.

The BDA Work Ready programme

How it works



We are the partners that will measure and report change, and assess progress to ensure a programme of continuous improvement.

This White Paper shows that both the workforce and management need to be directly involved for any successful public health initiative in the workplace.

A guide to the language used in this paper

Body Mass Index (BMI)

BMI is one measure which is often seen as a sign of health, whether weight loss is required or not and it is important to note that the long-term benefits of eating well are around maintaining a healthy weight – and therefore apply to people of all sizes.

Overweight and obesity

Whilst weight is often chosen as a proxy for health, the focus of this paper is on wellness. Our review was based primarily on scientific literature which relies on medical terminology such as overweight and obesity. It has been suggested that using weight measures, such as BMI may create a stigma and prejudices associated with overweight and obesity[19] rather than improvement in health and wellbeing. This could be detrimental in a workplace where weight bias can already be prevalent[20, 21] and fuel a bullying culture undermining team-based workforces. A focus on measures including 'change of feeling' and quality of life factors may be more appropriate and potentially more successful for a cohesive workforce.

Therefore extra caution must be taken in the implementation of any wellness programme which discusses weight. The Association for the Study of Obesity has a useful position paper on weight bias and stigma.[22]

Units

All reported measures in this paper are initially cited in the original format of the study. As a result, there is a mixture of empirical units (pounds) and SI units (International System of Units) (kilograms) provided. These have been converted to provide both formats to enable easier comparison. The conversion of 1 kg=2.2 pounds (lbs) has been used and figures rounded.

The BDA recommends that employees play a major part in setting up any programme in the workplace and that the focus is on feeling well and maintaining a healthy weight, avoiding any overt messaging around the burden of obesity on the employer.

19 O'Hara L, Taylor J. Health at Every Size: a Weight-neutral Approach for Empowerment, Resilience and Peace.International Journal of Social Work and Human Services Practice 2014; 2(6):272-282.
20 Giel K, Thiel A, Teufel M et al. Weight bias in work settings-a qualitative review. Obes Facts 2010;3(1):33-40.
21. Puhl R, Brownell K. Bias, discrimination and obesity. Obesity Research 2001;9(12):788-805.
22 ASO Position Paper: Weight Bias and Stigma, June 2015 http://aso.freestyleinternet.co.uk/wp-files/uploads/2015/07/ASO-weight-bias-and-stigma-position.pdf

Section 1: The health of the workforce

Being in work is a determinant of health[23] and, along with socio-economic status, work is one of the main drivers of social gradients in health but to enable wellbeing, work needs to be 'good work'. Some determinants of this can be found in Appendix 1. Economists say that society needs the maximum number of productive years from as many people as possible, and being healthy is a condition for optimum work.[24] Given this, it makes sense that maximising healthy life as a proportion of total life is a desirable goal for society as well as individuals.

Who are the UK workforce?

Currently in the UK, nearly three quarters of adults (aged 16-64) are in work with three quarters of those working full time (37.4 hours per week on average in their main job).[25] This total equates to almost 31 million people, representing 78% of men and 69% of women.

Roughly five million people are employed by central and local government, another two million work in the third sector (charity, non-government organisation) and the remainder are employed in the private sector.[26] Young adults (aged 16-24) make up 3.9 million people in work. As the population itself ages, we are working for longer[26] with average retirement ages at 65 for men and 63 for women. 1.1 million workers are aged over 65 (a figure which has more than doubled since 2001). Whilst a good proportion of employers say that the ageing workforce is positive for their business, nearly two fifths (38%) predict that health issues associated with an ageing workforce will impact their business.[27]

I decided to enrol on the [programme] after deciding to alter my lifestyle after yoyo weight problems, and also to receive help, back up and the kick in the backside I needed.

The main incentive was I wanted to do something – I have five lively grandchildren and want to keep up with them and see them grow up and hopefully see as many of them as possible starting their own families and, like my mother, see great grandchildren.

The initial meeting with [the dietitian] gave good advice and the fact she is available to contact for advice and support are a valuable tool.

Dietitian-led intervention (healthy retirement). Retail worker

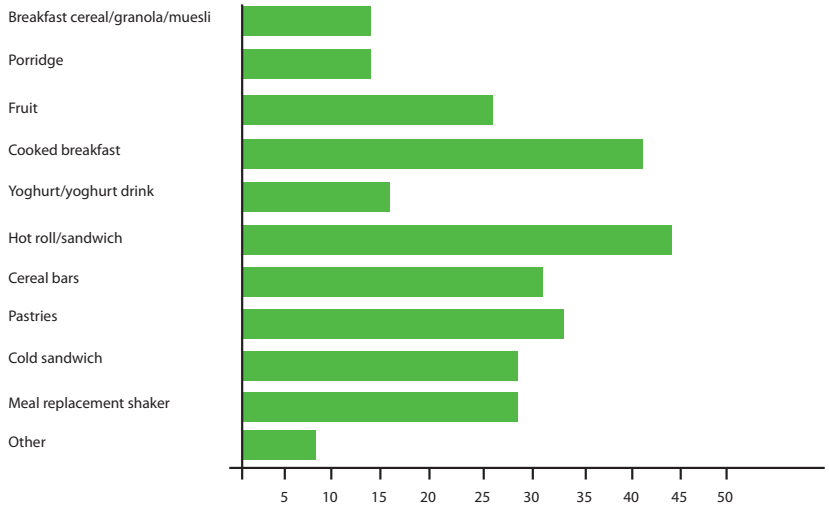
What are we eating at work?

If we work full time, what we eat generally provides at least 60% of our total daily intake in an average working day, so workplace nutrition has a significant impact on our health.

Those with a regular daytime working pattern typically eat breakfast at home, though 55% of breakfast eaters do sometimes eat out of home (e.g. at work, coffee shop, while travelling) with one third of adults doing so once per week.

23 WHO Social Determinants of Health, The Solid Facts 2nd Edition.
24 Fair Society, Fair Lives. Marmot Review 2010.
25 UK Labour Market, July 2015, Office of National Statistics.
26 Department for Business, Innovation & Skills, November 2014 https://www.gov.uk/government/statistics/business-population-estimates-2014.
27 Pensions Trends, Office of National Statistics 2013 http://www.ons.gov.uk/ons/rel/pensions/pension-trends/chapter-4--the-labour-market-and-retirement--2013-edition/index.html.

Breakfast habits outside the home



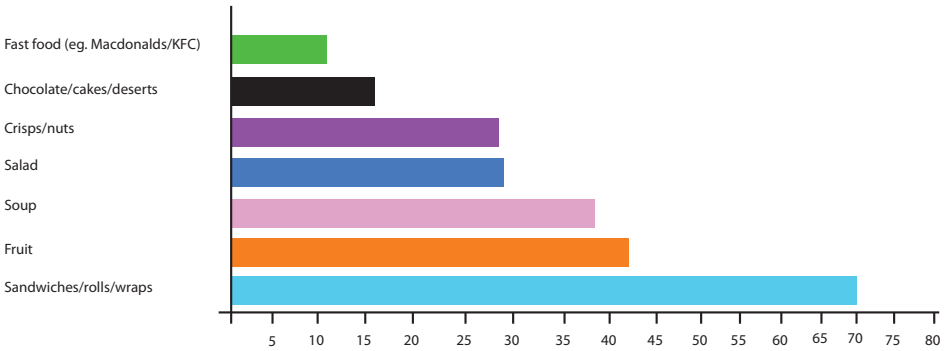
Base: 1095 internet users who have eaten breakfast out of the home.
Adapted from Mintel Breakfast Eating Habits, April 2014

This consumption data reinforces that eating breakfast at home should remain a key health message, as well as supporting the role for healthier 'on the go' products.

Moving onto lunch (the most common meal occasion to have at work), around a quarter of adults eat lunch at their desk every day or at least two to three times a week[28] and 27% of workers eat lunch daily or two to three times per week in a canteen, reinforcing the imperative for good quality food provision and information. People who work in a regular daytime pattern are most likely to eat lunch at their desks.

Of those who eat lunch on weekdays, nearly four in ten bring their lunch from home every day or at least two to three times a week. Lunch is still seen as more of a refuelling exercise than a leisure activity, and concerns about the economy and rising unemployment mean that people are working harder and for longer hours resulting in missing meals or eating at a desk while working as well as fuelling demand for convenience foods and eating on the go.

Weekday lunch habits for adults



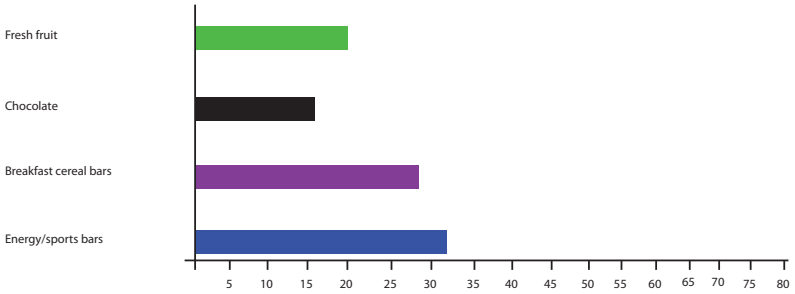
Base: 1473 internet users aged 16+ who eat lunches on weekdays.
Adapted from Mintel Lunch and Sandwich report, May 2011

28 Aviva Health of the Workforce Report, November 2012 https://www.aviva.co.uk/healthcarezone/document-library/files/ge/gen4722.pdf.

When asked about their health concerns, 28% of people surveyed, who often used a sandwich bar for lunch, agreed that they always thought of the calories of what they ate (for lunch) and 33% said they always checked the nutritional content, showing that the renewed emphasis from policy makers on out-of-home calorie labelling remains a useful strategy for workers seeking this information. With two out of three people not always checking nutritional content of their food, employers can partner with appropriate providers to proactively make this more visible.

Snacking is an ingrained habit in the UK[29] – 97% of adults eat between meals. Three quarters of people who snack do so at least once a day, rising to 81% in adults aged under 35. Although home is the most typical place for people to eat snacks, snacking is also prevalent at work/places of study.

Snacking at work/place of study*



*One month surveyed asking about locations for consuming most popular snacks.
Adapted from Mintel Consumer Snacking - UK, March 2015*

Drinking habits at work

A variety of fluids contribute to hydration whilst people work. There is a lack of data on what people drink during working hours but one survey in the UK and Eire found that coffee, bottled water and fizzy drinks are the most popular drinks in the workplace.[30]

Hydration levels are affected by many environmental conditions in the workplace, such as air conditioning in offices, hot physical conditions, the wearing of protective clothing as well as limited access to drinks. Fluid losses do need to be replaced through a rich and varied diet including foods and drinks with a high level of water content. Not being well hydrated during the working day can cause headaches, tiredness and loss of concentration and impact on mental as well as physical performance.[31]

The workplace reflects society in terms of age, gender, income and ethnicity. The often quoted adage that 'we are what we eat' holds true in the workplace. Organisations offer powerful channels to support behaviour change and healthier practices.

29 Consumer Snacking – UK, Mintel, March 2015.
30 Snacking In Ireland & UK, March 2014, Bord Bia.
31 Adan A (2012) Cognitive performance and dehydration. J Am Coll Nutr; 31 (2):71-78

Section 2: The business benefits of investing in healthier eating and drinking habits

The business drivers for investing in workplace health and wellbeing include cost (absenteeism, presenteeism); legal (health and safety law, personal injury); benefit (customer satisfaction, performance, staff retention) and brand (employee and public perception, investor perception).

An international view from a World Health Organisation report in 2007 found that there was a 25-30% reduction in medical and absenteeism costs over an average period of three to four years for both physical activity and diet-related interventions. Physical inactivity and a poor diet are associated with increased healthcare costs – on average they are each attributable to approximately 2% of the total healthcare costs. The indirect costs from lost productivity that is attributable to physical inactivity and a poor diet are plural and can run up to the fourfold of the health care costs from physical inactivity and a poor diet.

In the UK, a key document *Building the Case for Wellness*, 2008, by Price Waterhouse Coopers[32] has statistics regarding commercial issues (for example on sickness, costs, injuries) and although a few years old, it is still often quoted. It was made available by the Department of Work and Pensions in 2013 as part of their evidence base on work issues.[33]

More recently, a 2012 report by the Greater London Authority London's Business Case for Employee Well-being[34] includes some London-specific referenced figures regarding the cost of ill health: an average London firm of 250 employees loses around £4,800 per week (or around £250,000 a year) due to sickness absence. Whilst estimates of the total cost of ill health to the economy vary, a relatively recent and comprehensive review cited in the report put the cost of poor health in the UK working age population in 2007 at between £103-129 billion.

C3 Collaborating for Health reviewed the evidence of effectiveness for workplace health initiatives and some topline figures demonstrate good return on investment:[34]

- IBM invested US$80 million in workplace health over three years, and saved $100 million on health-care costs.
- Intel corporation: Over the three-year life of the programme, the total labour cost savings have been nearly US$18 million, and programme costs have been nearly $11 million, making Intel's return on investment 1:1.64. This demonstrates the short-term cost-effectiveness of employer investment in comprehensive programmes.

32 2008, by Price Waterhouse Coopers https://www.gov.uk/government/uploads/system/uploads / attachment_data/file/209547/hwwb-dwp-wellness-report-public.pdf.
33 Department of Work and Pensions evidence on the business case for wellbeing at work https://www .gov.uk/government/collections/health-work-and-wellbeing-evidence-and-research (including Dame Carol Black's Report, Employers survey in 2011).
33 (Greater London Authority, 2012) http://www.london.gov.uk/sites/default/files/GLA%20 economics%20 London%27s%20business%20case%20for%20workplace%20health%202012.pdf#page=9&zoom=auto,-107,778.
34 C3 Collaborating for Health (2011) Workplace health initiatives: evidence of effectiveness. Available from: http://www.c3health.org/wp-content/uploads/2009/09/Workplace-health-initiatives-review-of-the-evidence-v-1-20111205.pdf

Most policy and business documents looking at wellbeing do not separate out nutrition interventions from other health-related interventions, but the BDA review has identified some quality studies which do offer more specific insights.

Return on Investment (ROI)

There are significant workplace costs associated with obesity. In 2015, the National Institute for Health and Care Excellence (NICE) estimated that employees with obesity take an average of four extra days sick per year and that for an organisation employing 1000 people, this could equate to more than £126,000 a year in lost productivity due to a range of issues including back problems and sleep apnoea.[35]

A high quality review in 2011 on the financial return of worksite health promotion programmes aimed at improving nutrition and/or increasing physical activity[36] looked at 18 studies. Worksite health promotion programmes aimed at improving nutrition and/or increasing physical activity generated financial savings in terms of reduced absenteeism costs, medical costs or both, but the authors cautioned the interpretation of the results as some of the programmes were also associated with additional types of benefits, so conclusions about their overall profitability cannot be made.

In 2007, the top ten drivers of healthcare and productivity costs of four large US employers were calculated[37] and obesity came out as eighth related to productivity costs. Other drivers that were ranked higher included fatigue, depression, arthritis, hypertension, back and neck pain and other pain, which can also be improved by good nutritional care (see section 3).

In 2009, the same author looked at health-related lost productivity.[38] Productivity was measured among ten employers with more than 50,000 employee respondents using the Health and Work Performance Questionnaire combined with medical and pharmacy claims. Health-related productivity costs were shown to be significantly greater than medical and pharmacy costs alone (on average 2.3 to 1). Chronic conditions which respond well to good nutritional care as part of a wider intervention, such as depression/anxiety, obesity, arthritis, and back/neck pain, were noted as especially important causes of productivity loss.

Summary findings on ROI:

- **The costs associated with obesity, back pain and chronic conditions such as depression/anxiety are high. Good nutritional care can improve these conditions.**
- **Costs relating to healthcare and productivity loss have been demonstrated – NICE estimates that a company employing 1000 people, could lose more than £126,000 a year in lost productivity due to obesity alone.**
- **Productivity gains are likely to more than offset the costs of implementing interventions, and other factors such as absenteeism need to be taken into account in addition when looking at Return on Investment (ROI).**

There is evidence that nutrition interventions can support strategies to reduce sickness absence, presenteeism, accident reduction and improvements in customer care.

35 NICE (2015) Workplace health: Costs and savings. Available from: http://publication.nice.org.uk/workplace-health-lgb2/costs-and-savings.
36 van Dongen JM, Proper KI, van Wier MF et al (2011) Systematic review on the financial return of worksite health promotion programmes aimed at improving nutrition and/or increasing physical activity. Obes Rev; 12(12):1031-49.
37 Loeppke R, Taitel M, Richling D et al (2007) Health and Productivity as a Business Strategy J Occup Environ Med; 49(7):712-21.
38 Loeppke R, Taitel M, Haufle V (2009) Health and productivity as a business strategy: a multiemployer study. J Occup Environ Med; 51(4):411-28.

Productivity

The BDA review has found that specific information regarding workplace interventions (particularly in nutrition interventions) and productivity are difficult to quantify but may improve labour productivity by 1%-2%.[39] A 2011 study reviewed 30 papers and found that diet-related worksite health promotion interventions had a positive improvement effect on productivity and that on larger worksites, such productivity gains are likely to more than offset the costs of implementing such interventions. The data in this field is still emerging and some studies show only marginal effects,[40] however a 2011 study looking at 49 companies found that more than 10% of sick leave and higher levels of productivity loss at work may be attributed to lifestyle behaviours and obesity.[41]

The effectiveness of a workplace programme may be larger in younger populations and in interventions with weekly contacts, but may have less impact in a workforce where productivity is already high and/or lifestyles are generally healthy.

Summary findings on productivity:

- **Higher levels of productivity loss at work may be attributed to lifestyle behaviours and obesity**
- **Workplace health interventions may improve productivity by 1-2%.**

Absenteeism

Section 3: Health of Workforce looks at sickness absence in some detail and concludes that maintaining a normal weight gives the lowest risk for sickness absence. The BDA review found that weight loss, weight gain and stable obesity increased the risk for sickness absence spells of all lengths.[42,43]

A 2009 systematic review looked at the relationship between overweight and obesity, and sick leave.[44] A clear trend was discerned that overweight was a predictor of especially long spells (>7 days) of sick leave. In regards to obesity, there was strong evidence linking obesity with sick leave, with consistent findings demonstrating that obesity was a significant predictor of long-term sick leave.

It is not possible to determine which obesity measure most accurately predicts sickness. In 2013, a team looked at different measures of body weight as predictors of sickness absence.[45] First, the study aimed to compare body mass index (BMI), waist circumference (WC), and waist-to-hip ratio (WHR) as predictors of sickness absence spells of various lengths. Second, it aimed to compare BMI based on self-reported and measured weight and height as a predictor of sickness absence to assess the validity of self-reported BMI. Differences in the predictive power of BMI and WC were small: both were more strongly associated with sickness absence than WHR. Self-reported BMI performed equally well as measured BMI.

39 Jensen JD (2011) Can worksite nutritional interventions improve productivity and firm profitability? A literature review. Perspect Public Health; 131(4):184-92.
40Rongen A, Robroek SJ, van Lenthe FJ, Burdorf A (2013) Workplace health promotion: a meta-analysis of effectiveness. Am J Prev Med; 44(4):406-15.
41Robroek SJ, van den Berg TI, Plat JF, Burdorf A (2011) The role of obesity and lifestyle behaviours in a productive workforce. Occup Environ Med; 68(2):134-9.
42Roos E, Laaksonen M, Rahkonen O (2014) Weight change and sickness absence - a prospective study among middle-aged employees. Eur J Pub Health; 25 (2): 263–7.
43VanWormer JJ, Linde JA, Harnack LJ (2012) Weight change and workplace absenteeism in the Healthworks study. Obes Facts; 5 (5): 745-52.
44 van Duijvenbode DC, Hoozemans MJ, van Poppel MN, Proper KI (2009) The relationship between overweight and obesity, and sick leave: a systematic review. Int J Obes (Lond); 33(8):807-16.
45 Korpela K, Roos E, Lallukka T et al (2013) Different measures of body weight as predictors of sickness absence. Scand J Public Health; 41(1):25-31.

Work setting example – construction workers

In 2009 a study of 16,875 male construction workers in Germany looked at overweight, obesity and risk of work disability[46] with a follow-up period of 10.8 years. An association of BMI and all-cause work disability was observed, with the lowest risk of disability at BMI levels between 25-27.4 kg/m2 (overweight). The authors found that obesity increased the risk of work disability due to osteoarthritis and cardiovascular disease.

Summary findings on absenteeism:

- **Obesity is strongly associated with sickness absence in the workplace.**
- **Employees that maintain a healthy weight have fewer periods of sick leave, especially long term sickness.**
- **BMI, whether measured or self-reported, is a useful measure for predicting sickness absence.**

Presenteeism

It has been speculated that presenteeism costs UK workplaces £15bn per year, compared to around £8bn for absenteeism.[47] The reasons why employees may come in while unwell include worries about job security, pressure from peers, increasing pressures from workload. The Chartered Institute of Personnel and Development (CIPD) reported that 93% employers reported seeing increased levels of people coming into work ill during the last year.

Investors in People (2014) identified that stress is caused by different issues. In 2007-10 the main cause was "too much change in the workplace" but in 2011-13 this had changed to "not enough time to do my job". The most common reason why people came into work when sick was "they didn't think it was serious enough to take time off" (76%). 80% said they would not take time off for stress-related illnesses. 81% said they had caught illnesses from colleagues or customers.

Currently a limited number of interventions linking presenteeism with nutrition are available, but a focus on health and wellbeing overall can help to reduce sickness and stress and so avoid the potential of presenteeism.

46 Claessen H, Arndt V, Drath C, Brenner H (2009) Overweight, obesity and risk of work disability: a cohort study of construction workers in Germany. Occup Envir Med; 66:402-9.
47 IIP (Investors in People) (2014) 9 tips for countering presenteeism in the workplace. Available from: http://www.investorsinpeople.co.uk/resources/ideas/9-tips-countering-presenteeism-workplace.

A 2015 report *Health, Wellbeing and Productivity*[48] suggested that lack of sleep, financial concerns and giving unpaid care to family members or relatives are negatively associated with productivity. Mental health problems are also found to cause significant productivity loss, especially in the form of presenteeism. In line with existing research, they also find that employees with musculoskeletal and other (chronic) health conditions report higher rates of absenteeism and presenteeism than workers without such conditions.

When looking at work-environment factors they found that workers who are subject to workplace bullying report significantly higher levels of absenteeism and presenteeism than those who are not. We have already identified that workers who are obese are more likely to be bullied.

Work setting example – healthcare workers

A Danish study looked at the effects on presenteeism and absenteeism in a one-year workplace study among healthcare workers.[49] 144 employees at a care unit in Denmark were involved and the intervention consisted of calorie-limited diet, physical exercise, and cognitive behavioural training during working hours, one hour per week. The reference group was offered presentations about healthy lifestyle. Absenteeism and presenteeism (productivity, workability, and sickness absence) were recorded at baseline and after three and 12 months of intervention. A significant effect of the intervention was found for productivity after three months. Nevertheless, after 12 months no significant effects on absenteeism or presenteeism were found, showing how difficult it is to measure.

Summary findings on presenteeism:

- **Presenteeism, as well as absenteeism, is becoming a significant factor relating to productivity.**
- **Employees with musculoskeletal and other (chronic) health conditions report higher rates of absenteeism and presenteeism than workers without such conditions. Good nutritional care can improve outcomes for these workers.**

48 Hafner M, van Stolk C, Saunders C (2015) Health, Wellbeing and Productivity. RAND Europe. Available from: http://www.rand.org/pubs/research_reports/RR1084.html

49 Christensen JR, Overgaard K, Hansen K et al (2013) Effects on presenteeism and absenteeism from a 1-year workplace randomized controlled trial among health care workers. J Occup Environ Med; 55(10):1186-90.

Accident prevention

Health and Safety Executive (HSE) statistics show that in 2013/14 more than 28.2 million working days were lost due to work-related illness or injury. In 2012/13 injuries and new cases of ill health resulting largely from current working conditions, cost society an estimated £14.2 billion. Over half of this cost fell on individuals, whilst the remainder was shared between employers and Government. Financial costs such as those associated with lost productivity or healthcare represent £6.0 billion of total cost.[50]

The BDA review found limited evidence in the scientific literature with regards to nutrition-related health behaviour changes and accidents to form a firm conclusion, but one study of 800 nurses[51] showed that consuming breakfast daily was associated with lower stress, fewer cognitive mistakes and minor accidents at work, as opposed to perceived unhealthier snacking which were associated with higher stress and more minor injuries outside of work.

Work setting example – Merseyrail

The Office for Rail Regulation (2011) in their report *Work related ill health in the GB rail industry* in 2010 identified a clear need for the rail industry to adopt a more proactive approach to the prevention of work-related ill health. The Heart on Track challenge at Merseyrail[52] wanted to tackle heart health – primarily to support its workers but also to reduce the possibility of accidents. In partnership with a dietitian, they created a bespoke workplace health intervention for 50 workers which responded to their expressed needs. The scheme proved to be very successful and based on the statistics collated from all employees who participated, they found that their sickness levels reached 35 days when compared to the previous year's total of 155 days. This reduction in sickness levels more than justified the running of the scheme, since this amounted to a £11,000 reduction in costs based on an average direct cost of sickness per day of £95 (figure as of August 2012).

Summary findings on accidents:

- **The BDA review found limited evidence in the scientific literature with regards to nutrition-related health behaviour changes and accidents, but there are indications that eating breakfast can have a positive influence.**

50 HSE1 (2014) Health and Safety Statistics. Annual Report for Great Britain 2013/2014. Available from: www.hse.gov.uk/statistics/overall/hssh1314.pdf. Accessed 14/6/15.
51 Chaplin K and Smith AP Breakfast and snacks: associations with cognitive failures, minor injuries, accidents and stress.Nutrients. 2011 3(5):515-28.
52 Office of Rail and Road http://orr.gov.uk/__data/assets/pdf_file/0006/3588/oh-case-study-heartontrack.pdf.

Reputation and customer service

Experiencing positive feelings at work has been shown to have a positive impact on wellbeing at work, which improves staff performance. The reasons are complex but the wellbeing of frontline workers is vital to an organisation's reputation, and the BDA review found that weight loss programmes can improve quality of life factors (including improved mentally unhealthy and depression days).[53]

Work setting example – National Health Service

In the National Health Service (NHS), where many employees are involved directly in advising the general public about health, creating a positive image is important and the Royal College of Physicians say that patients are affected when the health of frontline staff is neglected.[54] It is suggested that if the NHS is representative of the UK working population as a whole, the NHS may have almost one million staff who are overweight or obese (Cabinet office 2008). Department of Health research revealed that overweight people question the validity of advice given by overweight health professionals.[55] Therefore, achieving better health for health professionals may have other indirect benefits for patients.[56]

Exit from employment

Obesity and subsequent chronic ill health may be a risk factor for exit from paid employment. A 2010 study on the impact of ill health on exit from paid employment in Europe among older workers[57] reviewed 4611 workers in 11 countries aged between 50-63 years.

17% of employed workers left paid employment, mainly because of early retirement. Low education, obesity, low job control and effort-reward imbalance were associated with measures of ill health, but also risk factors for exit from paid employment after adjustment for ill health.

In another review,[58] 29 studies were included and the authors concluded that workers with mental health problems had an increased likelihood for transition into disability pension. Chronic disease was a risk factor for transition into disability pension or unemployment.

53 Bruno M, Touger-Decker R, Byham-Gray L, Denmark R (2011) Workplace weight loss program: impact on quality of life. J Occup Environ Med; 53(12):1396-403.
54 Work and wellbeing in the NHS: why staff health matters to patient care, Royal College of Physicians [date]
55 Department of Health (DH) (2008) Healthy weight, healthy lives: a toolkit for developing local strategies. London. Available from: http://www.fph.org.uk/healthy_weight%2c_healthy_lives%3a_a_toolkit_for_developing_local_strategies. Accessed 29/6/15.
56 Ni Mhurchu, Aston LM, Jebb SA (2010) Effects of worksite health promotion interventions on employee diets: a systematic review. BMC Public Health; 10: 62.
57 van den Berg T, Schuring M, Avendano M (2010) The impact of ill health on exit from paid employment in Europe among older workers. Occup Envir Med; 67: 845-52.
58 van Rijn RM, Robroek SJ, Brouwer S, Burdorf A (2014) Influence of poor health on exit from paid employment: a systematic review. Occup Envir Med; 71: 295-301.

Section 3: Health of the workforce

It is well accepted that workplaces play a key role in preventing illness and promoting health and wellbeing as UK public health strategies.[59] Poor nutrition and diet contributes to several serious health conditions, such as type 2 diabetes, cardiovascular disease, and many common cancers.[60]

In the workplace, obesity is one of the most common and costly health problems. Other conditions linked with obesity and poor diet such as back pain, stress, coronary heart disease and diabetes add to employer costs. People who are obese also suffer more sickness and absences from work,[61] with around 16 million lost working days attributable to obesity-related illness in the UK in 2002.[62] Therefore, a healthier workforce can lead to improved health for individuals whilst also benefitting employers and society.

The BDA review found that employers who implement effective workplace health interventions may help improve lifestyles of employees and their families, but businesses can benefit from the additional bonus of helping create a positive corporate image as well as increased productivity and cost benefit.[63] Further evidence shows that people who have higher levels of wellbeing are more likely to be loyal, more productive and provide better levels of customer satisfaction than individuals with poor standards of wellbeing.[64]

Healthy eating patterns and key related clinical conditions

This section looks at the statistics around the most common reasons for sickness absence and provides brief recommendations for how a healthy diet can support wellness. Dietitians are experts in translating nutritional recommendations into practical and easy-to-use guidance for the wide spectrum of employees in a workforce.

Stress, depression and anxiety

In 2011, the Department of Health estimated that 1 in 4 British adults experience at least one diagnosable mental health problem in any one year, and 1 in 6 experiences this at any given time.[65] 1 in 4 women will require treatment for depression at some time, and 1 in 10 men.[66]

Stress, depression and anxiety accounted for the greatest amount of lost working time (11.4 million days a year) with the average days lost per case being 27 days.[67] Mental ill health is the largest single cause of disability in the UK, contributing almost 23 per cent of the overall burden of disease compared to about 16% each for cancer and cardiovascular disease.[68]

Dietitians are experts in translating nutritional recommendations into practical and easy-to-use guidance for the wide spectrum of employees in a workforce.

59 Black C (2008) Working for a healthier tomorrow. Dame Carol Black's Review of the health of Britain's working age population. London: TSO. Available from: https://www.gov.uk/government/publications/working-for-a-healthier-tomorrow-work-and-health-in-britain. Accessed 29/5/15.
60 Ezzati MLA, Rodgers A, Hoorn Vander S, Murray CJL, (2002) The Comparative Risk Assessment Collaborative Group: Selected major risk factors and global and regional burden of disease. The Lancet; 360:1347-60.
61 van Duijvenbode DC, Hoozemans MJ, van Poppel MN, Proper KI (2009) The relationship between overweight and obesity, and sick leave: a systematic review. Int J Obes (Lond); 33(8):807-16.
62 Government Office for Science & DH (2007) ForeSight: Tackling Obesities: Future Choices. London: Available from: https://www.gov.uk/government/collections/tackling-obesities-future-choices.
63 Ni Mhurchu, Aston LM, Jebb SA (2010) Effects of worksite health promotion interventions on employee diets: a systematic review. BMC Public Health; 10:6.
64 Well-being at Work, New Economics Foundation, February 2014.
65 NHS Factsheet on depression: http://www.nhs.uk/Conditions/Depression/Pages/Introduction.aspx.
66 MIND, Key Facts and Trends in Mental Health (2011), p3. http://www.nhsconfed.org/Publications/Documents/Key_facts_mental_health_080911.pdf.
67 Department of Health, Mental Health Promotion and Mental Illness Prevention: the Economic Case (2011) http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_126085.
68 No Health Without Mental Health (2013) https://www.gov.uk/government/publications/mental-health-dashboard

The economic and social costs of mental health problems in England are estimated at around £105 billion each year.[69]

The latest estimates from the Labour Force Survey (LFS) showed that the total number of cases of work-related stress, depression or anxiety in 2013/14 was 487,000 (39%) out of a total of 1,241,000 cases for all work-related illnesses.[70]

The relationship between common mental health disorders such as depression and anxiety and obesity is complex. Research indicates that obesity can lead to common mental health disorders, and that people with such disorders are more prone to obesity.[71] Both disorders share similar symptoms such as sleep problems, sedentary behaviour and poorly controlled food intake.[71] There is growing evidence to suggest that good nutrition is just as important for mental health as it is for physical health and that a number of conditions, including depression, may be influenced by dietary factors.[71] Assisting people to effectively manage stress may have a positive impact on the ability to control both mood and weight.

Quality of Life

Health-related quality of life is a subjective measurement concerning general wellbeing and ability to enjoy normal life activities. It includes both physical and mental health. Many factors such as sleep, stress and mood are markers of quality of life. There is some evidence that weight loss may impact on some aspects of quality of life for some people who are overweight or obese.[72] A 2011 study showed that reduced psychosocial stress was strongly associated with long-term weight loss and weight maintenance[73] and there was a suggestion that job satisfaction was inversely related to BMI with a trend for improvement due to modest weight loss.[74] A large, long-term study[75] indicated there may also be gender differences when looking at increasing physical activity in obesity-specific quality of life, with a greater effect in women. This is important to note, as sickness absence due to stress, depression and anxiety has been consistently higher in women than men[76] (13% vs. 8%).

A New Economics Foundation report *Wellbeing at Work* reviewed an extensive piece of work where 16,000 employees across 15 different UK organisations from a variety of sectors concluded that higher productivity was associated with better psychological wellbeing.

Improving mental health and wellbeing is an integral part of improving an individual's health and it can support savings for UK employers.[77]

Complex carbohydrates keep a steady supply of blood glucose to the brain … ask your dietitian how to prevent tiredness and keep your workforce alert.

69 Mental Health Foundation, citing The Office for National Statistics Psychiatric Morbidity Report (2001) http://www.mentalhealth.org.uk/help-information/mental-health-statistics/UK-worldwide/?view=Standard.
70 Labour Force Survey, 2013/14 http://www.hse.gov.uk/statistics/causdis/stress/index.htm
71 Gatineau M, Dent M (2011) Obesity and Mental Health. Oxford: National Obesity Observatoryhttp://www.noo.org.uk/uploads/doc/vid_10266_Obesity%20and%20mental%20health_FINAL_070311_MG.pdf
72 Bruno M, Touger-Decker R, Byham-Gray L, Denmark R (2011) Workplace weight loss program: impact on quality of life. J Occup Environ Med; 53(12):1396-403.
73 Ovbiosa-Akinbosoye OE, Long DA (2011) Factors associated with long-term weight loss and weight maintenance: analysis of a comprehensive workplace wellness program. J Occup Environ Med; 53(11):1236-42.
74 Barham K, West S, Trief P (2011) Diabetes prevention and control in the workplace: a pilot project for county employees. J Public Health Manag Pract; 17(3):233-41.
75 Cash SW, Duncan GE, Beresford SA et al (2013) Increases in physical activity may affect quality of life differently in men and women: The PACE project. Qual Life Res; 22 (9): 2381-8.
76 No Health Without Mental Health (2013) https://www.gov.uk/government/publications/mental-health-dashboard
77 Donald I, Taylor P, Johnson S, Cooper C, Cartwright S & Robertson S (2005) Work Environments, Stress and Productivity: An examination using ASSET. International Journal of Stress Management, 12 (4), 409-23

Musculoskeletal disorders (MSDs)

MSDs cover a broad range of disorders that affect the joints, bones, muscles and connective tissue. MSDs also include rheumatoid arthritis, osteoarthritis, ankylosing spondylitis and low back pain (LBP).

Musculoskeletal disorders were the second most common type of work-related illness, and accounted for 8.3 million days of sickness absence.[78] Workers self-reported that illness was made worse by work – in 2013/14 184,000 MSD illnesses started in the last 12 months and 341,000 reported that the MSD illness had started more than 12 months ago.

Musculoskeletal disorders were the most common type of work-related illness according to doctors and specialist physicians, with an average number of days lost per case of 16 days.

Another review on low back pain (LBP)[79] showed that 62% of people experiencing their first episode of LBP will develop chronic symptoms lasting longer than one year, with 16% of people still on sick leave from work at six months.

The Work Foundation looked at the self-management of chronic MSDs[80] and found that they are widespread, with the General Lifestyle Survey recording self-reported chronic sickness of the musculoskeletal system at a rate of 139 per 1000 people in 2011 – the highest rate for any single category of conditions.

Overweight and obesity

A study in 2011 looked at the role of obesity and lifestyle behaviours in a productive workforce.[81] More than 10% of sick leave and higher levels of productivity loss at work may be attributed to lifestyle behaviours and obesity.

Public Health England notes that obesity can impact on the workplace in a number of ways.[82] An interesting study in the BDA review showed that employees with obesity take more short and long-term sickness absence than workers of a healthy weight.[83]

In addition to the impact on individual health and increased business costs due to time off work through associated illnesses, people with obesity frequently suffer other issues in the workplace including prejudice and discrimination.

There also may be jobs which people with obesity find more difficult or dangerous to do due to the associated conditions linked to obesity, for example sleep problems may impact on alertness and may pose a potential danger for employees who drive or operate machinery.[79]

Consultation is under way on new evidence about Vitamin D protecting musculoskeletal health… ask your dietitian about the best sources, particularly for workers with little sunlight exposure who spend a large proportion of their time indoors or who wear protective clothing.

78 Health and Safety Statistics, 2013/14 www.hse.gov.uk/statistics/overall/hssh1314.pdf
79 Hestbaek L et al (2003) Low back pain: what is the long-term course? A review of studies of general patient populations.
80 Self-management of chronic musculoskeletal disorders and employment, 2014 http://www.theworkfoundation.com/DownloadPublication/Report/370_REPORT%20-%20Self-management%20of%20chronic%20musculoskeletal%20disorders%2009%202014%20(1).pdf.
81 Robroek SJ, van den Berg TI, Plat JF, Burdorf A (2011) The role of obesity and lifestyle behaviours in a productive workforce. Occup Environ Med; 68(2):134-9.
82 Public Health England www.noo.org.uk/LA/tackling/workplaces
83 Harvey SB, Glozier N, Carlton O et al (2010) Obesity and sickness absence: results from the CHAP study. Occup Med; 60 (5): 362-8.

Work setting example – London Underground

A total of 2,114 staff members from London Underground Ltd underwent regular clinical examinations that involved their height and weight being measured, obesity-related medical problems being diagnosed and psychiatric disorders being identified. The number of days taken for short (less than 10 days in an episode) and long-term (greater than10 days in an episode) sickness absence were recorded. There was a positive linear association between employees' BMI and the number of days of work missed due to sickness absence. Obesity was a risk factor for both short and long-term sickness absence. Individuals with obesity typically took an extra four days sick leave every year. The majority of the increased risk for long-term sickness absence appeared to be mediated by chronic medical conditions. The excess short-term sickness absence was not explained by obesity-related medical problems, psychiatric disorders or workplace factors.

Preventing people from becoming overweight or obese can lead to the following costs and savings to the healthcare system:

- In 2007, the direct cost of obesity to the NHS as a service provider was £2.3 billion and the direct cost of being overweight, but not obese, was £1.9 billion.
- An estimate of the direct cost to the NHS in 2006/07 of people being overweight and obese was £5.1 billion. These costs are dwarfed by the cost to society as a whole – which includes those resulting from unemployment, early retirement and associated welfare benefits. In 2007, these were estimated at an additional £11.6 billion.
- In 2007, the direct costs to the NHS were forecast to increase to £7.1 billion (obesity) and £2.6 billion (overweight) respectively by 2050. By then, the cost to society was predicted to rise to £50 billion – including NHS costs, but not including the provision of social care by local authorities.

In 2014, a panel of U.S. employers looked at the evidence on the association between employee obesity and employer costs. They found there was a probability of disability, workers' compensation claims, and number of days missed owing to any cause, increased with BMI above 25, as did total employer costs.[85]

85 Van Nuys et al (2014) The association between employee obesity and employer costs: evidence from a panel of U.S. employers (USA).

I needed something to focus me to lose some weight … and this is exactly what [the intervention] did. [The dietitian] gave me the confidence to reconsider what and how I eat and to set a realistic goal, which I achieved.

Realising just small changes could help the health of my heart was really encouraging.

Dietitian-led intervention (goal setting). Office worker (transport sector)

Furthermore, they found that the probability of a short-term disability claim increases faster for employees with co-morbidities associated with obesity (hypertension, hyperlipidemia, or diabetes).

Normal weight employees cost on average $US3830 per year (as at 2011) in covered medical, sick day, short-term disability, and workers' compensation claims combined; employees who are morbidly obese cost more than twice that amount, or $US8067 (as at 2011).

Looking at the costs of obesity-attributable absenteeism, another US study[86] found that obesity, but not overweight, is associated with a significant increase in workdays absent, from 1.1 to 1.7 extra days missed annually compared with normal-weight employees.

Obesity is a multi-factoral condition, influenced by environment as well as personal nutrition choices. In terms of the work setting, a recently published overview of the support for evidence-based lifestyle interventions in the workplace for weight-related outcomes[87] favoured multi-component interventions which focussed on both physical activity and nutrition over single dietary programmes.

The BDA review examined the evidence concerning nutrition and physical activity interventions in workplaces for controlling employee overweight and obesity. One review of 47 studies showed that such interventions achieved improvements in employee weight at 6-12 month follow-up – a pooled effect of -2.8 pounds [1.3 kgs] and a decrease in BMI of 0.5 kg/m2.[88] Another found evidence that workplace physical activity and dietary behaviour interventions significantly reduce body weight (mean difference 1.19kg [3 lbs]) and a BMI reduction of 0.34 kg/m2 across 22 studies.[89] There was a greater reduction in body weight when the intervention also looked at the environment in the workplace (i.e. vending machines/canteens).

While these reductions may seem small, they indicate a successful maintenance and loss in weight and BMI, rather than an increase. A reduction of only 5% body weight has positive effects on health.[90]

Support in examining eating patterns, setting realistic goals, increased activity and following a healthy eating plan can all facilitate behaviour change… ask your dietitian how.

86 State-Level Estimates of Obesity-Attributable Costs of Absenteeism (USA) Andreyeva et al (2014)
87 Schröer S, Haupt J, Pieper C (2014) Evidence-based lifestyle interventions in the workplace—an overview. Occup Med (Lond); 64(1): 8-12.
88 Anderson L, Quinn TA, 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(4): 340–57.
89 Verweij LM, Coffeng J, van Mechelen W, Proper KI (2011) Meta-analyses of workplace physical activity and dietary behavior interventions on weight outcomes. Obesity reviews; 12(6):406-29.
90 Blackburn G (1995) Effect of degree of weight loss in health benefits. Obesity Research 3: 211S-216S.

Healthy habits for optimal performance in the workplace

Diet quality

The quality of a diet i.e. the amount of beneficial nutrients it contains is important for health and optimum performance. When looking to improve diet quality, education programmes alongside environmental modification is recommended, with a face to face element included.[91] A 2013 review of six high quality studies looked at the effectiveness of workplace dietary modification interventions and found that they can increase fruit and vegetable intakes (by around half a serving).[92] Another review in the same year looked at 20 interventions[93] concerning the effectiveness of subsidising healthy food purchase and consumption to improve the quality of the diet (the interventions were not purely workplace) and all but one found that a subsidy significantly increased the purchasing and promotion of the promoted products, showing that it can be an effective strategy in modifying dietary behaviour.

Staying well-hydrated

The evidence found in the BDA review reinforces that normal hydration is important for cognitive function.[94] Dehydration has been shown to have an impact on brain structures, similar to mild cognitive impairment.[95] There is evidence to show effects of mild dehydration (1-2% loss of body weight), on short-term memory and cognition test scores,[90,96] and on a greater number of errors (whilst driving) in healthy adults.[94] The studies reviewed, whilst interesting, do not directly translate into specifics concerning work performance or accidents at work, where there is no specific evidence to link these to dehydration.

Adequate hydration and regular eating patterns can support staff in accurate decision making and help prevent lower concentration levels, fatigue and anxiety.[97,98]

Latest studies show that all non-alcoholic drinks count towards a recommended fluid intake of at least six to eight glasses or mugs per day (more in hot or active conditions. Ask your dietitian about healthy habits for hydration.

91 Aneni EC, Roberson LL, Maziak W et al (2014) A systematic review of internet-based worksite wellness approaches for cardiovascular disease risk management: outcomes, challenges & opportunities. PloS One; 9(1): e83594.
92 Geaney1 F, Kelly C, Greiner BA et al (2013) The effectiveness of workplace dietary modification interventions: a systematic review. Prev Med; 57(5):438-47.
93 An R (2013) Effectiveness of subsidies in promoting healthy food purchases and consumption: a review of field experiments. Pub Health Nutr; 16 (7): 1215-28.
94 EFSA (2011) Scientific Opinion on the substantiation of health claims related to water and maintenance of normal physical and cognitive functions (ID 1102, 1209, 1294, 1331), maintenance of normal thermoregulation (ID 1208) and "basic requirement of all living things" (ID 1207) pursuant to Article 13(1) of Regulation (EC) No 1924/2006. EFSA Journal; 9(4):2075.
95 Streitbürger DP, Möller HE, Tittgemeyer M (2012) Investigating structural brain changes of dehydration using voxel-based morphometry. PLoS One; 7(8):e44195.
96 Lindseth PD, Lindseth GN, Petros TV et al (2013) Effects of hydration on cognitive function of pilots. J Mil Med; 178(7):792-8.
97 Ganio MS, Armstrong LE, Casa DJ (2011) Mild dehydration impairs cognitive performance and mood of men. Br J Nutr; 106(10):1535-43.
98 Armstrong LE, Ganio MS, Casa DJ (2012) Mild dehydration affects mood in healthy young women. J Nutr; 142(2):382-8.

Work setting example – hospitals

Hospital doctors and nurses are one group of workers that are potentially at greater risk of dehydration due to environmental conditions such as the levels of air conditioning, warm temperature, long busy shifts, limited breaks and a ban on consuming drinks when face-to-face with patients and relatives. Two studies looked at the effect of nutritious meals, snacks and fluids (i.e. regular eating and drinking patterns)[99] and another looked at dehydration.[100] Cognition scores and short-term memory tests were both affected, but there is no evidence to date that this translates into errors in decision-making or clinical outcomes.

A note on shift workers

Shift workers are at increased risk of developing obesity,[101] metabolic syndrome[102] and type 2 diabetes.[103] This is in addition to a previously known association with ischaemic cardiovascular disorders. The causative factors suggested include increased snacking, the unavailability of preferred foods in the workplace, a lack of time, a reduced desire to eat, and the disruption of 'normal' family eating habits. Total energy intake and meal composition do not seem to be affected by participation in shift work.[104] It is also suggested that the metabolic responses to food are also altered by shift work disruptions to sleep and circadian rhythms.[105]

"According to the International Agency for Research on Cancer (part of the World Health Organization), about 15–20% of the working population in Europe and the US is engaged in shift work. Shift work occurs in virtually all industries – but one in which it is unavoidable, given the need for 24-hour coverage, and where virtually every worker will be exposed at some point in their working life, is the healthcare industry", (PLoS Medicine Editors, 2011).

99 Lemaire JB, Wallace JE, Dinsmore K (2010) Physician nutrition and cognition during work hours: effect of a nutrition based intervention. BMC Health Serv Res; 10:241.
100 El-Sharkawy A, Bragg D, Watson P et al (2015) Hydration amongst doctors and nurses on call (the HANDS on Prospective Cohort Study). European Hydration Institute Network meeting (currently unpublished).
101 Kubo T, Oyama I, Nakamura T et al (2011) Retrospective cohort study of the risk of obesity among shift workers: findings from Industry based Shift Workers Health Study, Japan. Occ Envir Med; 68(5):327-31.
102 Pietroiusti A, Neri A, Somma G et al (2010) Incidence of metabolic syndrome among night shift healthcare workers. Occup Environ Med; 67: 54-57.
103 Gan Y, Yang C, Tong X et al (2015) Shift work and diabetes mellitus: a meta-analysis of observational studies. Occup Environ Med; 72: 72-78.
104 Atkinson G, Fullick S, Grindey C, Maclaren D (2008) Exercise, energy balance and the shift worker. Sports Med; 38(8):671-85.
105 Ekmekcioglu C, Touitou Y (2011) Chronobiological aspects of food intake and metabolism and their relevance on energy balance and weight regulation. Obes Rev; 12(1):14-25.

Work setting example – transport/sales force

One recent study from Loughborough University[106] showed that even mild dehydration can have a negative impact on mental functions, from reduced concentration and alertness to changes in mood. In lab simulator tests, they found that drivers who have not had enough fluid to drink made double the number of errors compared to those who were properly hydrated – roughly the same number as someone who has consumed the legal limit of alcohol.[107]

Spotlight: shift work and diabetes

A review of 12 studies and 28 independent reports involving 226,652 participants and 14,595 patients with diabetes included,[108] identified a link between shift work and risk for diabetes. Analysis suggested a stronger association in men, but all shift work schedules, with the exception of mixed shifts and evening shifts, were associated with a statistically significant higher risk of diabetes than normal daytime schedules.

Spotlight: shift work and metabolic syndrome

Two studies examined the incidence of metabolic syndrome among night shift workers. The first[109] followed 402 male and female night shift nurses for four years and assessed them against 336 nurses working daytime shifts only. The cumulative incidence of metabolic syndrome was 9% among night shift workers versus 1.8% for those on daytime shifts and the authors concluded that the risk of developing metabolic syndrome is strongly associated with night shift work in nurses.

A population based study of 27,485 people found that obesity was more prevalent among shift workers in all age strata of women, but only in 2 out of 4 age strata of men.[110] High triglycerides and low concentrations of HDL cholesterol alongside obesity seem to cluster together more in shift workers than in day workers, implying a greater risk for metabolic syndrome.

Spotlight: working long hours

Working long hours (more than 8 hours per day) and regular overtime was found in one office-based study to increase the risk for developing type 2 diabetes.[111] While the reasons for this increased risk were not identified, it is more common to have poorer eating habits and increased stress due to regularly working long hours.

Long working hours increase the risk of poorer eating habits. Ask your dietitian for top tips on how to combat this.

107 Watson P, Whale A, Mears SA et al (2015) Mild hypohydration increases the frequency of driver errors during a prolonged monotonous driving task. Physiology & Behaviour; 147: 313-18.
108 Physiology and Behaviour, R Maughan, Loughborough University
109 Pietroiusti A, Neri A, Somma G et al (2010) Incidence of metabolic syndrome among night shift health-care workers. Occup Environ Med; 67: 54-57.
110 Karlsson B, Knutsson A, Lindahl B (2001) Is there an association between shift work and having metabolic syndrome? Results from a population based study of 27, 485 people. Occup. Envir. Med; 58: 747-52.
111 Nakanishi N, Nishina K, Yoshida H et al (2001) Hours of work and the risk of developing impaired glucose or type 2 diabetes mellitus in Japanese male office workers. Occup Environ Med; 58(9):569-74.

Section 4: The evidence for nutrition behaviour-change interventions at work

The social-ecological model

Research shows the most effective approach to lead healthy behaviour, including in workplace health, is a combination of approaches at more than one level. The social-ecological model recognises that there is a relationship between the individual and their environment and while individuals are responsible for instituting and maintaining lifestyle changes, individual behaviour is determined largely by the social environment.

The programmes that address both individual level determinants such as knowledge or attitudes, as well as broader social and environmental determinants, are known as 'multi-level'.

A key paper states that, "There is a consensus that workplace health promotion needs to surpass the realm of education and intervene at multiple levels of worksite environment to have sufficient influence on dietary behaviour."[112] Interventions that include higher level environmental components tend to be more cost-effective and are less likely to generate inequalities than interventions using individually focussed components alone.

There is strong evidence to support multi-level interventions from systematic reviews, which have consistently found that health interventions addressing both individual and environmental determinants of health are the most effective.[112-114]

Levels that dietitians can directly influence in workplaces are primarily individual behaviour change (through one-to-one counselling or group sessions for example) and environmental and organisational change (through interventions that target food and drink provision such as cafeterias, restaurants, vending machines and water coolers for example – plus positive organisational policy changes).

Work setting example – education

A study in 2014[113] showed the results of a multi-level weight gain prevention intervention in a school workplace setting. The intervention targeted the nutrition and physical activity environment and policies, the social environment and individual knowledge, attitudes and skills. There was a net change in weight of -3.03 pounds [-1.38 kg] and a change in BMI of -0.48 kg/m2 which continued to increase over time compared with a control group. The employee engagement was maintained and the healthy eating elements saw stable or increased participation over time.

112 Geaney1 F, Kelly C, Greiner BA et al (2013) The effectiveness of workplace dietary modification interventions: a systematic review. Prev Med; 57(5):438-47.
113 Lemon SC, Wang ML, Wedick NM et al (2014) Weight gain prevention in the school worksite setting: results of a multi-level cluster randomized trial. Prev Med; 60:41-7.

The Greater London Authority (GLA) is currently rolling out a Workplace Charter.[114] It has eight sections, one of which is 'healthy eating'. Their Framework develops from an 'individual behaviour change level' (at commitment level) to organisational change (at achievement and excellence level), thus progressing to a multi-level programme.

Work setting example – GLA Workplace Charter

Greenwich Co-operative Development Agency (GCDA) specialises in creating and supporting sustainable communities to meet health needs and to help develop healthier food environment / food enterprises. The health and wellbeing agenda is high on the organisation's priorities and is included in the delivery plan. A dietitian leads on the implementation of the London (GLA) Healthy Workplace Charter for the organisation. The dietitian delivered an assessment on needs and priorities around health at work, what processes are already in place and an action plan.

Behaviour change strategies and nutrition intervention studies

Behaviour change interventions have been shown to improve behaviour and help prevent disease, particularly in the short term.[115] A summary paper that looks at the evidence from NICE and the Cochrane Collaboration, found that both behaviour therapy and cognitive behaviour therapy are effective in leading to weight loss among people who are overweight or obese.[116]

There is evidence that programmes aimed at improving nutrition behaviour to decrease weight are effective in promoting behaviour change but there is limited evidence on work outcomes in the reviews. *Understanding the Effectiveness of Dietary and Food Choice Interventions* by Davies et al (2010[117]) found that, in workplace settings, the most effective interventions at that time included educational interventions directed at behaviour change.

Different types of interventions, regarding both diet quality and weight management, varying from internet-based programmes to changes in the workplace environment to dietary modification, can be effective in changing dietary behaviour, at least in the short term. Future workplace interventions need to consider strategies to sustain behaviour change in the long term such as updates, refresher courses, ongoing incentives or long-term involvement of influential peers.

Behaviour change strategies can be used to effectively tackle the interlinked issues of disease prevention and weight loss. The methods often used in health promotion for individuals or groups include cognitive behavioural therapy (CBT) and motivational interviewing (MI). There has also been a call for strategies for enhancing peoples' sense of self-worth and self-efficacy in order to give them sufficient faith in themselves to make healthier choices about their weight.[118]

114 http://www.london.gov.uk/priorities/health/focus-issues/health-work-and-wellbeing
115 Jepson RG, Harris FM, Platt S, Tannahill C (2010) The effectiveness of interventions to change six health behaviours: a review of reviews. BMC Public Health; 10:538.
116 Cavill N, Ells L (2010) Treating adult obesity through lifestyle change interventions. A briefing paper for commissioners. Oxford: National Obesity Observatory.
117 Davies P, MacPherson K, Faruquie D, Froud E (2010) Understanding the Effectiveness of Dietary and Food Choice Interventions: A review of reviews. Oxford Evidentia. Available from: http://www.academia.edu/1895559/Final_report
118 Cochrane G (2008) Role for a sense of self-worth in weight-loss treatments: helping patients develop self-efficacy. Can Fam Physician. 2008 Apr; 54(4):543-7.

In addition to the regular support provided by the site team, each year General Electric sets aside a day to bring focus to the health and wellbeing of its employees; an event called HealthAhead day. This year (2015) we were able to provide a dietitian-led seminar.

The session really benefited our employees were keen to learn how to improve their energy levels. Unlike previous nutrition seminars held by others in the past, where one is told to eat more X group and less Y group (the WHAT), the session was much more focussed on the HOW & the WHY which resulted in, not only, better understanding but also showed how easy it is to make simple life style changes that bring huge benefit.

GE Bracknell, HealthAhead Site Champion

Nudge

'Nudging' is an approach to behaviour change and a 'nudge' can be healthy or unhealthy. Nudging involves structuring the choices that people make in order to lead them towards particular outcomes.[119]

It is described as "interventions that involve altering small-scale physical and social environments, or micro-environments principally those within buildings such as restaurants, workplaces, homes and shops to cue healthier behaviour."[120]

In other words nudging is concerned with the design of choices, which influences the decisions that are made, based on the concept that people often decide instinctively and irrationally rather than logically. It is based on indirect encouragement and enablement, and it avoids instruction or enforcement. It is an indirect approach which alters situations for people so that options are designed to produce choices that create helpful voluntary changes in people.

Practical examples of potentially beneficial nudges include:

- positioning of drinks and water coolers where workers can easily access them
- providing smaller containers of carbonated drinks (a 330ml can versus a 500ml bottle)
- displaying fruit at eye level at checkouts – eye level is buy level
- displaying useful information appropriately – for example nutritional information of dishes at point of purchase in a queue area of the canteen.

Although level of success of nudging techniques is sometimes debated, there is no evidence of detrimental consequences as a result of using them.

119 Baldwin R (2014) From Regulation to Behaviour Change: Giving Nudge the Third Degree. Mod. Law Rev; 77, 831–57.
120 Hollands GJ, Shemilt I, Marteau TM et al (2013) Altering micro-environments to change population health behaviour: towards an evidence base for choice architecture interventions. BMC Public Health; 13: 1218.

Work setting example – Construction and Civil Engineering

A Health at Work pledge specifically for the construction and civil engineering sector has been developed, so that workers are encouraged to make the right choices through environmental cues and positive reinforcement rather than regulation. "We will implement some basic measures for encouraging healthier staff restaurants/vending. In our industry this means making sure that site and office canteens, kiosks, or vending machines have healthy options on the menu so that workers can easily make healthy food choices".[121] Dietitians are well placed to support the industry, many of whom are SMEs, to deliver on this pledge.

Behaviour change summary:

- Behaviour change strategies are effective in workplace settings
- Dietitians are experts in behaviour change strategies (including MI and CBT)
- 'Nudge' techniques, e.g. product placement in canteens, can play a role
- Staff interaction improves behaviour change effectiveness – this may include the use of workplace champions

Behaviour change nutrition intervention studies – individual or group sessions?

Nutrition intervention studies involving individual behaviour change were grouped in the BDA review to examine whether individual counselling or group sessions were more beneficial.

All interventions reported some benefits (either weight loss, or reduced risk factors). The majority of nutrition interventions had a physical activity component alongside. One study of the effect of an individualised assessment programme on health (using metabolic parameters)[122] showed that one-to-one counselling from a dietitian and physical trainer, combined with website support, significantly shifted habitual food group intakes and showed metabolic improvement in male professional workers.

121 http://www.h10constructionpledge.co.uk/

122 Maruyama C, Kimura M, Okumura H (2010) Effect of a worksite-based intervention program on metabolic parameters in middle-aged male white-collar workers: a randomized controlled trial. Prev Med; 51(1):11-7.

Work setting example – Airline

A 2015 study looked at the feasibility and effectiveness of a diabetes and CVD prevention intervention delivered by occupational health to 2312 employees of an airline company.[123] Participants with an elevated risk for type 2 Diabetes were offered one to three counselling sessions and half of those selected agreed to participate. At two and a half years, a follow-up study showed that a larger proportion of the men who had attended interventions lost at least 5% weight (18.4% vs 8.4%) when compared with those who had not attended.

A study reviewed group settings which looked at a lifestyle intervention to reduce body weight and improve cardiometabolic risk factors in worksites.[124]
This was a structured weight maintenance programme and showed a substantial mean weight loss 8kg [18lbs] versus control subjects who gained 0.9kg [2lbs].

Work setting example – Healthcare

A 2012 study looked at weight loss among female healthcare workers in a one-year trial. 98 workers were assigned to an intervention or a control group. The intervention group was offered one hour per week of training on diet, physical activity and cognitive behaviour. The control group was offered monthly oral presentations. The intervention group significantly reduced body weight by -6kg [13lbs] and BMI by -2.2 kg/m2. There were no statistically meaningful reductions in the control group.

Recommendation

Both individual counselling and group sessions are beneficial. This allows providers the flexibility to tailor interventions to the needs of the business and workforce after an assessment is undertaken. It has been observed that employees who are overweight or obese in study worksites who were not enrolled in the weight-loss programme lost weight, compared with subjects in control worksites.[118] This demonstrates an independent effect of behavioural level influences on those who are not directly involved in behaviour change programmes.

I began [the programme] as I seemed to have been dieting continually for over three years. Though I was only a little overweight, I wanted to lose about a stone so that I would feel more comfortable and to date I have pretty much achieved my goal. [The dietitian] helped me to focus on my eating, and I realised that there wasn't too much that I really needed to change, just do all those 'treats' I have in moderation. I never had to cut anything out altogether, just have less of it. Not too difficult really, but you need somebody to say it to you to make it sink in and I'm feeling really good right now!

Dietitian-led intervention (behaviour change) - Office worker

123 Viitsalo K, Hemiö K, Puttonen S et al (2015) Prevention of diabetes and CVD in occupational health care; feasibility and effectiveness. Prim Care Diabetes; 9(2):96-104.
124 Salinardi TC, Batra P, Roberts SB et al (2013) Lifestyle intervention reduces body weight and improves cardiometabolic risk factors in worksites. Am J Clin Nutr; 97(4):667-76.

Organisational behaviour change in nutrition intervention studies

Studies on dietary changes in the food and drink provision in canteens/staff restaurants or via vending machines were reviewed. This is based on the premise that the provision of healthy meals and snacks promotes positive dietary intakes.

The article 'Frequent use of staff canteens is associated with unhealthy dietary habits and obesity in a Norwegian adult population'[125] found that frequent eating in staff canteens was negatively related to socio-economic position and positively associated with unhealthy dietary habits (Western dietary habits). This partly explained higher odds for obesity among frequent users of staff canteens. This was as a result of a survey of almost 9000 workers and demonstrates how important 'the availability of healthy choices at a reasonable cost' is amongst workers who regularly eat in the canteen environment.

Several studies looked at the way organisational behaviour change can increase the availability and consumption of fruit and vegetables. One showed an increase of 49g (15%) in availability (just over half a portion) and they also showed a reduction in total fat and increase in dietary fibre in follow-up. The consumption increase was positive, though slight, at 11g.[126] Another intervention, described as 'minimal' showed a significant increase in fruit intake of 112g (just under 1.5 portions).[127]

Healthier vending in workplaces is both possible and effective.[128] 16% of staff in a hospital used vending machines once a week or more, with little change post-intervention (15%). The study implemented healthier guidelines which resulted in a substantial reduction in the amount of energy (-24%), total fat (-32%), saturated fat (-41%), and total sugars (-30%) per 100 g product sold. Sales volumes were not affected. The proportion of staff satisfied with vending machine products increased. This shows that the implementation of nutrition guidelines in vending machines can lead to substantial improvements in nutrient content of vending products sold.

Work setting example – Automotive

To prevent obesity among metropolitan transit workers, the increased availability and pricing on healthy vending machines was reviewed along with group behavioural programmes.[129] The intervention effect on the garage mean BMI change was not significant (-0.14 kg/m2). However, energy intake decreased significantly, and fruit and vegetable intake increased significantly in intervention garages compared to others.

125 Kjøllesdal MR, Holmboe-Ottesen G, Wandel M (2011) Frequent use of staff canteens is associated with unhealthy dietary habits and obesity in a Norwegian adult population. Public Health Nutr; 14(1):133-41.
126 Bandoni DH, Sarno F, Jaime PC (2011) Impact of an intervention on the availability and consumption of fruits and vegetables in the workplace. Public Health Nutr; 14(6):975-81.
127 Alinia S, Lassen AD, Krogholm K (2011) A workplace feasibility study of the effect of a minimal fruit intervention on fruit intake. Public Health Nutr; 14(8):1382-7.
128 Gorton D, Carter J, Cvjetan B, Ni Mhurchu C (2010) Healthier vending machines in workplaces: both possible and effective. N Z Med J; 123(1311):43-52.
129 French SA, Harnack LJ, Hannan PJ (2010) Worksite environment intervention to prevent obesity among metropolitan transit workers. Prev Med; 50(4):180-5.

Work setting example – NHS Trust

The Food for Life initiative is currently being piloted in three NHS Health Trusts – the main setting previously being schools. Although it includes six areas that define a health-promoting approach to food in hospitals (including patient food) it also includes 'Staff Health and Wellbeing'. The full independent evaluation is ongoing and not yet available.

Recommendation

The BDA review of evidence,[130,131] found that the drivers that supported improvements in food provision and choice in canteens, staff restaurants and vending machines were:

- nutritional labelling at point of purchase
- healthy labelling certification scheme
- ease of availability to customer (including time required to access)
- increased availability to customer (vending)
- awareness that healthy choices are available
- appropriate pricing of healthy choices
- involvement of catering team and management in policy development
- participation of workforce voice in planning
- inclusion of healthy nutritional specifications for products used in vending machines.

Barriers to provision and uptake of healthy food choices included:

- catering service run as business, with concurrent incentives from manufacturers
- lack of promotion of the changes
- resistance from the market place in providing appropriate items/sizes of items for vending machines
- long length of contracts so changes more difficult to make (vending)
- devolvement of responsibility to corporate food organisations regarding items provided
- the quantity and level of support required by some providers to make changes.

There are many good wellness programmes tailored to the workplace such as Know your Numbers run by occupational health, Walk for Life and smoking cessation services from the NHS. Nutrition programmes can be easily designed to complement these and sit alongside them to maximise the benefits for all employees.

Healthier vending in workplaces is both possible and effective.[125] 16% of staff in a hospital used vending machines once a week or more.

130 Lassen AD, Beck A, Leedo E (2014) Effectiveness of offering healthy labelled meals in improving the nutritional quality of lunch meals eaten in a worksite canteen. Appetite; 75:128-34.
131 Lassen AD, Thorsen AV, Sommer HM (2011) Improving the diet of employees at blue-collar worksites: results from the 'Food at Work' intervention study. Public Health Nutr; 14(6):965-74.

Section 5: What does a good nutrition workplace programme look like?

There is an opportunity for nutrition advice in workplaces and this is being filled by a variety of providers with a range of skills and expertise. There is often a lack of evidence to show the effectiveness of such wellness programmes and this section of the White Paper demonstrates how commissioners of such services can ensure they are quality-assured.

The majority of evidence available concerning nutrition interventions in the workplace is on weight loss and management interventions rather than other areas of healthy-eating behaviours such as fruit and vegetable intake. There are interventions that cover areas such as metabolic syndrome and reduction in CVD risk factors that also include weight management.

Weight loss and management studies tend to be put in place to deal with an existing problem (as identified through a needs assessment) whereas studies on healthy-eating behaviours tend to have a more preventative role. These two are not mutually exclusive and many programmes have both a preventative role as well as a treatment aspect to deal with an identified problem.

All interventions are composed of different steps or stages. Although not in a set order, they do follow a logical pattern and there are some steps that need to be taken before others (such as a needs assessment before planning). The evidence from the BDA review shows that the inclusion of certain factors can improve a nutrition intervention and can make it more effective and successful.

Summary of the key aspects of a good nutrition intervention:

- employees are involved in planning and delivering the intervention (through needs assessments and/or a team approach such as staff-side champions for example)
- senior management are consulted on the planning of an intervention as well as being visibly committed to the intervention
- multi-level approaches work best (for example group workshops alongside changes in the catering provision)
- electronic methods are extremely useful in delivering and supporting an intervention, but can be more effective if there is also face-to-face contact (for example prompts via email following a tasting session, or the provision of an electronic food and drink diary after a question and answer session on the importance of breakfast)
- physical activity combined with dietary approaches is more effective in weight management than as single components

- delivery – a mixture of types of activities shows better success rates
- people do not like being told what to do – behaviour modification strategies are important for behaviour change.

Key structure of successful interventions

The intervention must be appropriate in its content, delivery, timing and evaluation. This means that it is important to understand the current position of the company, any partnerships they have, how they operate, what they (both management and employees) want to achieve and all the differing groups of employees.

The published studies tend to be short – commonly less than six months or between 6-12 months. Those that were longer tend to follow up to about two years on average A follow up period for a full programme is recommended to be more than one year to accurately measure long-term impact and allow for change due to seasonal variations.[92]

The BDA review findings favour multi-component interventions that focus on both physical activity and nutrition over single dietary programmes.[132,133] When looking to improve diet quality, education programmes alongside environmental modification is recommended.[92,134,135]

A peer-reviewed meta-analysis and systematic reviews (17 studies) concludes that best results are achievable through comprehensive multimodal programmes that include relational and behavioural elements.[136]

Ideally when commencing with a needs assessment initially, involving both employers and employees leads to more informed decisions being made about planning the intervention, including when to start to maximise success. The timing of a workplace intervention is critical and providers should engage with the business concerned to understand their operating context and the drivers which will both facilitate and potentially impede the project's progress. An example of this was a workplace intervention at The Royal Mail to reduce salt intake, which happened during a busy Christmas season and prevented buy-in from managers as well as limited participation. Another example of hindrance to participation in this project was a large scale restructure during the intervention.

The timing of the implementation of an intervention needs to be mindful of seasonal effects (issues may occur near the end of the financial year, during holiday periods such as Christmas and the summer). As a bespoke programme, the BDA Work Ready Programme also has the flexibility to complement concurrent, media-led promotions that may also be popular with employees to maximise participation levels and benefit for the company.

132 Schröer S, Haupt J, Pieper C (2014) Evidence-based lifestyle interventions in the workplace—an overview. Occup Med (Lond); 64(1):8-12.
133 Ausburn TF, LaCoursiere S, Crouter SE, McKay T (2014) Review of worksite weight management programs. Workplace Health Saf; 62(3):122-6.
134 Aneni EC, Roberson LL, Maziak W et al (2014) A systematic review of internet-based worksite wellness approaches for cardiovascular disease risk management: outcomes, challenges & opportunities. PloS One ;9(1): e83594.
135 An R (2013) Effectiveness of subsidies in promoting healthy food purchases and consumption: a review of field experiments. Public Health Nutr; 16(7):1215-28.
136 Goldburger J, Ahrens D (2010) Effectiveness of workplace health promotion and primary prevention interventions: a review. J Public Health 18:75-8.

Workplace champions and 'Train the Trainer'

Involvement of workplace champions in the planned intervention was frequently mentioned in contributing to the success in effective interventions. A dietitian's role could be in managing an intervention and skilling the champions to be able to offer different levels of support. It is important to skill the champions to a level where they offer bespoke advice and could fit in with employees' needs. This emphasises the need to be flexible, be innovative and change as needed. Participants also reported that when other workers in the office were involved in the intervention, this gave an extra incentive for participation.

How should guidance be accessed?

Electronic methods, such as use of websites and emails for recording progress, receiving health information and prompts have the potential to change contact methods by providers but still achieve success in weight management services in the workplace. These are more successful if interventions also include face-to-face contact and changes in environmental factors.

A combination of face-to-face contact and electronic options (such as web-based prompt emails so that employees receive immediate electronic feedback on their goals/actions), is ideal as immediate feedback improved effectiveness and was liked by participants. Shift workers or those with no main work base may not have access to online options so other electronic access, such as Apps, must be considered. All employees must to be able to access advice.

Summary of structural requirements for a good nutrition intervention in the workplace:

- a follow-up period is recommended to be more than one year to accurately measure long-term impact
- avoid periods of large restructure or busy periods (e.g. Christmas in retail)
- workplace champions can be a useful asset with appropriate training
- online and face-to-face elements together are beneficial
- interventions can be as a group or individual for workers
- planning is crucial: a needs assessment and employee engagement is an essential first step
- outcome measures should be agreed and reported on by providers.

The components of successful interventions

Barriers and enablers to behaviour change in nutrition interventions

It is suggested that intervention approaches should consider gender of workforce. In one study there were gender-specific responses to obesity and weight loss quality of life factors.[137]

137 Cash SW, Duncan GE, Beresford SA et al (2013) Increases in physical activity may affect quality of life differently in men and women: The PACE project. Qual Life Res; 22 (9): 2381-8.

Likewise culturally sensitive interventions are crucial in promoting success.[138]

If gender and culture are not taken into account in planning of the intervention, these prove barriers to interaction and engagement.

Work setting example – Royal Mail

In a multi-level intervention run at The Royal Mail,[139] the acceptability of the delivery method varied between male and female employees. They found that 'The mode of delivery considered to be most useful by men was pamphlets, followed by food marking, posters and leaflets/ fliers in the rest area (rather than the canteen) and messages on the tables in the canteen. Women who took part in the intervention reported that they found the more interactive delivery methods of greater use, thus emphasising the importance of gender sensitivity in design and delivery of interventions promoting health.

The [intervention] was not just informative but practical as well. It is one of the rare presentations that employees have attended where they all participated in the event and took some positive thoughts away from it.

Feedback on a dietitian-led workshop, office setting (marketing)

Barriers are common across different workplaces

Barriers for employers were:

the cost of intervention

staff reductions

outside providers not agreeing with management

concerns about introducing new activities into a strained working environment

restrictive catering/ vending contracts

cost of/unable to provide food or exercise facilities

employers' fear of being too paternalistic

138 Ard JD, Cox TL, Zunker C et al (2010) A study of a culturally enhanced EatRight dietary intervention in a predominately African American workplace. J Public Health Manag Pract; 16(6): E1–E8.
139 Surpluss I (2008) 'With a Pinch of Salt' Men and Salt: A Workplace Intervention. A Men's Health Forum report for the Food Standards Agency. Available from: http://webarchive.nationalarchives.gov.uk/20101224202640/http://food.gov.uk/multimedia/pdfs/menandsaltreport.pdf Accessed 24/6/15.

I found it very helpful to have all the advice drawn together as one normally picks bits up in dribs and drabs. The full picture is very persuasive and makes me want to do something about it.

I know from what others have said that they really valued the session too. [The dietitian] managed to pack a great deal of information into a limited time, and … did it in a very energetic and engaging way that kept everyone interested throughout!"

Feedback on a dietitian-led intervention, office setting (healthcare)

Barriers for Employees

Personal	Environmental	In design of intervention
Too busy	Poor/inconvenient or no provision of onsite food provision	Lack of visible management support
Heavy workload/lack of time/work pressures/stress	Lack of exercise/fitness facilities	Lack of targeted nutrition to meet needs (possibly through inadequate or no needs assessment)
Sense of professionalism and work ethic hinder work nutrition practices (i.e. need to do something important such as seeing a patient before taking time for break)	Lack of communication and promotion of positive changes	Limited feedback to aid motivation (lacked feedback on specific goals)
Lack of commitment	Resistance from the market place in providing appropriate food/drink items	Lack of advice to overcome barriers
Concern regarding workplace confidentiality	Long length of contracts (with vending machines, food providers)	Risk of stigmatising individuals at higher health risk
Personal beliefs and knowledge regarding what 'healthy' means	Devolvement of responsibility to corporate food organisations	Lack of employee ownership
	Culture that encourages working through breaks	Inappropriate provision (for shift workers for example)
	Multi-locations or no specific base	No consideration of gender or culture
	Poor relations with management and co-workers	

Enablers that were identified included:

the importance of having visible management and employee ownership

staff interaction supported by 'staff-side champions' who were also able to deal effectively with management if there were problems needing resolution

gender of employee group and cultural setting

access to healthy food and supportive environments that linked with local businesses and residential neighbourhoods were also enablers to consider

targeting according to needs of workplace

Summary of key barriers and enablers for successful nutrition interventions

- make use of existing engagement channels, in particular trade union health and safety committees or employee benefit teams
- take gender and culture into account
- allow time for the wellness programme within work time
- cultural – working through breaks, working long hours
- facilities – no onsite canteen/eating place, outsourced canteen
- lack of targeting of the intervention due to poor initial needs assessment
- communicate results to managers and staff.

Conclusions

Summary of the findings

The scientific review by the British Dietetic Association was commissioned to investigate effective nutrition interventions in the workplace. In addition to supporting the commissioners of wellbeing services with a business case to undertake nutrition interventions, the research will provide background and recommendations for dietitians' involvement in effective workplace health interventions, the theme of office for the Chair of BDA 2015-16, and a public health initiative high on the UK health agenda.

The evidence shows that nutrition interventions in the workplace can be effective, particularly in the short term but cautions that effectiveness can be linked to components of the intervention such as participation, the ethos and leadership within the setting. Published long-term effectiveness and impact of workplace interventions is limited.

The literature does, however, provide significant information and direction on many important issues that need consideration and inclusion when planning and implementing effective workplace health interventions.

The findings can be categorised into four key themes:

1. Better business through positive leadership and commitment to health

It has been demonstrated that three key causes of sickness absence (obesity, musculoskeletal conditions and depression) are improved through high-quality nutritional care when combined with a holistic programme of support, with full management and employee participation. Employees that maintain a healthy weight have fewer periods of sick leave, especially long-term sickness and higher levels of productivity loss at work may be attributed to obesity and lifestyle behaviours.

2. Keeping healthy people at work and increasing their productivity potential whilst there

Higher levels of productivity loss at work may be attributed to lifestyle behaviours and obesity. Health promotion interventions have a positive improvement effect on productivity (1-2%). In larger worksites, such productivity gains are likely to more than offset the costs of implementing such interventions.

3. Working together to achieve a healthy weight for wellness

Maintaining a healthy weight is directly linked to good quality of life, and whilst it is challenging to discuss weight directly with individuals, it can be positioned as a shared goal within a workforce when discussed in the right way using the right expertise. Weight management programmes can improve quality of life factors for workers, which has a positive impact on wellbeing, thus improving staff performance.

4. Maintaining a healthy environment and culture within the workplace

It is right that workers should take responsibility for their individual healthy habits, but some unhealthy practices can be influenced by the environment. Small 'nudges' can create behaviour change and improve health. When implemented by experts using a validated model, behaviour change techniques can be effectively used across organisations to reduce healthcare costs, improve productivity and reduce absenteeism.

This White Paper has used published peer-reviewed literature and case studies to compile the recommendations for the BDA Work Ready Programme.

The BDA is commissioning two specific impact studies to further support these findings and the dietitian-led programme will be available for businesses from early 2016.

Appendices

Appendix 1

Guidance on other areas which are important to an integrated workplace health programme. There are a variety of conditions for the success of any integrated workplace health programme. Features of a workplace which have various degrees of influence over wellbeing, include:

- work-life balance
- job security
- job satisfaction
- pay
- management behaviour
- a safe working environment.

This White Paper does not aim to cover these issues, but the authors would suggest further reading:

- *Well-being at Work*, New Economics Foundation, February 2014.

Appendix 2

Health Equalities statement

Various studies have been conducted regarding the relationship between well-being and employment status. In general, many of these agree that those in employment have higher rates of wellbeing than those who are unemployed. Studies consistently show a large negative effect of individual unemployment on subjective well-being. Models which treat life satisfaction scales as a continuous variable, tend to find that the unemployed have around 5–15% lower scores than the employed.[140]

This White Paper looks at wellbeing studies and workplace health interventions on people in work, which means it does not address issues of health for people out of work due to sickness or other reasons. Being out of work is detrimental to health.

A systematic analysis for the Global Burden of Disease Study[141] showed that 21.3% of disabilities worldwide are due to musculoskeletal disorders and it is the second greatest cause of disability worldwide (as measured by years lived with disability (YLDs)).The biggest single cause of disability is back pain. Some people with MSDs find themselves distanced from the labour market and claiming social security benefits as a result of their condition. Research using data from 2009 found that 37% of Employment and Support Allowance claimants reported a musculoskeletal condition as their main health condition.[142]

The Health and Safety Executive reports that 2.3 million people with a mental-health condition are on benefits or out of work, with mental-health conditions the primary reason for claiming health-related benefits, with around 42 per cent doing so.[143]

It is well understood that better long-term condition management can make a real difference to narrowing the health inequalities gap. However since those with long-term conditions, especially when it affects their day to day activity, are less likely to be in work this paper cannot be seen to holistically support their desire to return to work.

140 Measuring National Well-being - What we do, March 2012. Office of National Statistics.
141 Global Burden of Disease Study, 2010 (2012) Vos T et al.
142 Self-management of chronic musculoskeletal disorders and employment, 2014. http://www.thework-foundation.com/DownloadPublication/Report/370_REPORT%20-%20Self-management%20of%20chronic%20musculoskeletal%20disorders%2009%202014%20(1).pdf.
143 Health and Safety Executive, Self-reported Work-related Illness and Workplace Injuries (2007), p. 2 http://www.hse.gov.uk/statistics/lfs/lfs0708.pdf.

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