



# Effectiveness of Lifestyle Health Promotion Interventions for Nurses: Protocol for a Systematic Review

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## Background

### Behavioural health risk factors of working age nurses

Risky lifestyle behaviours amongst nurses have been well documented. Studies have shown non-adherence among nurses to national public health guidelines for physical activity, diet, smoking, and alcohol consumption [1-10]. Obesity and overweight are prevalent in nurses. A study of Scottish nurses showed that 69% were overweight or obese, which was higher than rates for other healthcare professionals, unqualified care staff and those in non-health related occupations [11]. Recent analysis of data from the national Health Survey for England revealed that 25% of English nurses are obese (body mass index  $\geq 30.0$ ), again, with rates higher than those for other healthcare professionals [12]. Unhealthy lifestyle behaviours commonly cluster together, increasing nurse's health risks; for example, physical inactivity in nurses has been associated with other behavioural risk factors such as smoking and obesity [2]. Mental health issues are common within the nursing profession including high rates of work-related stress, burnout, anxiety and depression [13-16].

While nurses through their training are educated on the importance of physical and mental health and its relationship with morbidity and mortality, they do not necessarily transfer this knowledge to their own lifestyle practices [4,5,17,18]. Reasons for engagement in unhealthy lifestyle choices among the nursing workforce are complex. They may be related to individual factors such as personal motivation [18], job-related factors such as working long hours, heavy workloads and shift work [14,17] or environmental factors such as hospital catering availability [14].

### Implications of unhealthy lifestyle behaviours

Unhealthy lifestyle choices increase the risk of chronic dis-

ease and sickness absenteeism. In addition to the individual burden of physical and mental ill-health, staff sickness absenteeism incurs significant financial burden to the National Health Service (NHS). Approximately £1 in every £40 of the NHS budget is spent on NHS staff absence, which is estimated at £2.4bn per year before agency costs are taken into account [19]. In addition, presenteeism- working in poor health - is an escalating issue in the NHS [20,21], and costs twice as much as absenteeism [22].

Health and wellbeing of nurses may impact on productivity and the quality of patient care [23]. Absenteeism and high turnover reduce continuity of care for patients [24]. Presenteeism contributes to unsafe care [25]. Furthermore, nurses report that their own health behaviours may influence their attitude to health promoting [26], and their willingness and perceived ability to promote healthy lifestyles to patients [27-29]. A systematic review and meta-analysis found that nurses who smoked were 13% less likely to encourage patients to quit smoking and 25% less likely to organise smoking cessation follow-up [29]. Nurses who are overweight have reported a negative impact of their weight on their work performance [4]. This suggests that nurses own lifestyle choices may impact on care quality, and ultimately, patient clinical outcomes.

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The UK government has called for immediate action to improve the health of the NHS workforce, in particular front-line care staff [30,31]. However, nurses can be hard to reach, often due to work-related barriers to accessing lifestyle intervention, such as shift work [32]. There needs to be a better understanding of the types of lifestyle interventions that appeal to nurses, and which interventions can impact most positively on individual outcomes (i.e. lifestyle behaviour; physical and psychological health), and organisational outcomes (i.e. employee engagement, job satisfaction, performance, productivity, sickness absence, patient safety and care).

## Previous systematic reviews

This systematic review builds on previous reviews in this field. Chan and Perry [6] published a similar systematic review with studies included up to 2011, although new evidence has emerged following increased government and media attention around the impact of nurses' health on compassion and care quality. Psychological outcomes of lifestyle interventions (i.e. stress) were not previously considered, yet there is a known relationship between lifestyle behaviours and psychological wellbeing. For example, Jordan, et al. identified that nurses who had higher stress levels were more likely to engage in unhealthy eating as a coping strategy. The prevalence of mental health issues within the healthcare workforce is high [14,33,34]. A study by Sarafis, et al. [35] found that occupational stress impacted on the quality of life of nurses, influenced patient outcomes, and could be considered to be a predictor of nurses' caring behaviour implementation. Chan and Perry's [6] review did not explore organisational outcomes of lifestyle intervention and therefore it is not clear how lifestyle interventions for nurses may impact on outcomes such as work engagement, job satisfaction and sickness absenteeism. However, researchers have documented links between unhealthy lifestyle behaviours, stress, work engagement and job satisfaction [3,16,36,37]. There are complex organisational issues that impact on nurses' stress, NHS costs and care quality, including staffing shortages and workload, turnover, failure to retain staff, and shift patterns. However, it has been suggested that healthier working environments offering lifestyle intervention for nurses may generate a workforce with lower stress levels, greater employee satisfaction, greater retention of the nursing workforce, and ultimately may improve the quality of care being provided [3].

Systematic reviews around health promotion interventions addressing both individual (including physical and psychological health outcomes) and organisational outcomes of working age nurses have not yet been conducted. Prior systematic reviews have focused on one specific outcome and/or have restricted the focus to one specific type of nursing job role [38-40]. There is a clear need for a systematic review of lifestyle interventions targeting the nursing workforce more broadly, to determine which types of interventions impact most positively on individual outcomes (i.e. health behaviours; physical and psychological health), and organisational outcomes of interest to healthcare employers (i.e. employee engagement, job satisfaction, sickness absence).

## Aims

The primary aim of this systematic review is to establish the efficacy of lifestyle health promotion interventions intended to improve behavioural health risk factors and/or behavioural or clinical outcomes of working-age nurses. The secondary aim is to identify the efficacy of these interventions in improving organisational outcomes.

## Methods

This is a systematic review undertaken in line with guidance for reviews in health care [41]. The review was registered in PROSPERO on 29<sup>th</sup> May 2018 (CRD42018098642).

## Eligibility criteria

### *[i] Types of studies*

Due to the paucity of evidence identified in a previous review, controlled trials, non-controlled intervention studies and reviews of intervention studies will be eligible for inclusion. Non-controlled intervention studies may include interrupted time series studies, cohort studies, cross-sectional studies and case series.

### *[ii] Types of participants*

Studies will include working-age nurses defined as adults in employment holding a recorded nursing qualification. In studies with mixed participant groups, nurses must constitute at least 50% of the target population. Studies primarily targeting student nurses or retired nurses are excluded.

### *[iii] Context/Setting*

Any healthcare workplace setting in which nurses with a recorded nursing qualification are accessed. Studies from any country will be included.

### *[iv] Types of interventions*

Behavioural and/or educational interventions, either alone or in combination, will be included, which are aimed at improving any of (but not limited to):

- Health risk factors: overweight or obesity, diet, physical activity, smoking habits, problem drinking.
- Clinical health outcomes: type 2 diabetes, stroke, chronic heart disease, cancers, hypertension.
- Psychological health outcomes: stress, anxiety, depression, burnout, self-efficacy.
- Organisational outcomes: job satisfaction, organisational commitment, employee engagement, sickness absenteeism, early retirement, performance, productivity, staff retention, staff turnover, patient safety and care.

### *[v] Comparator(s)/control*

Since the purpose of the review is to identify lifestyle health promotion interventions (as well as to assess efficacy of these) it is not possible to define comparator(s)/control in advance. However, for any controlled trial studies identified, we will describe what interventions the control group received. If no alternative interventions were used for the

control group, this will also be stated. For any non-controlled studies identified, comparator(s)/control is not applicable.

*[vi] Types of outcome measures*

Studies will assess outcomes either as changes in health knowledge, health behaviours, disease risk factor indices, related mortality and morbidity or changes in organisational outcomes (including job-related factors, patient safety and care). Eligible risk factor changes and clinical outcomes will be specified. This may include scores from baseline to last available follow-up. Outcome measures may include (though not limited to):

- Changes to weight, BMI, waist or other anthropometric indices
- Changes to diet (e.g. intake of fruit and vegetables; lipid and cholesterol levels)
- Changes in levels of physical activity (e.g. frequency, duration, intensity)
- Changes to smoking habits (e.g. number of cigarettes smoked per day, cessation attempts)
- Changes in alcohol consumption
- Changes to psychological health (e.g. levels of stress, anxiety, burnout, depression, self-efficacy)
- Clinical outcomes (e.g. related morbidity; hypertension with changes in systolic and/or diastolic values; type 2 diabetes with changes in incidence prevalence or indices of glycaemic control such as HbA1c values. Longer-term related morbidity or mortality included incidence of Acute Coronary Syndrome; renal or liver failure; peripheral vascular disease; cerebrovascular disease; incidence of neurovascular complications of type 2 diabetes; cancers)

- Organisational outcomes (e.g. changes in job satisfaction, organisational commitment, employee engagement, sickness absenteeism, early retirement rates or intentions, performance measures, productivity, staff retention rates, staff turnover rates, measures of patient safety and care).

**Search strategy**

Seven electronic databases will be searched (using MeSH and free text search terms) for eligible studies including the Cochrane Central Register of Controlled Trials; MEDLINE and PubMed; EMBASE; CINAHL; PsycINFO; and BioMed Central from January 2000 to August 2017. Reference lists of identified records and relevant reviews will be checked. Only studies published in English will be included. A proposed search strategy is included in [Table 1](#).

**Selection processes**

Two reviewers will independently perform study selection. A reference manager program will be used to store references and this will be used to identify any duplicated records. Once duplications have been removed, the titles and abstracts of remaining records will be screened. Full texts will be sought for records which clearly refer to behavioural and/or educational lifestyle interventions for working age nurses. These full texts will then be assessed for eligibility, taking into account intervention type, study population, outcomes reported, and language. Agreement will be reached through discussion, and if consensus cannot be reached, a third reviewer will make the final decision.

**Data extraction**

Data extraction will be performed independently by two reviewers and agreement will be reached through discussion. If consensus cannot be reached, a third reviewer will

**Table 1:** Example search strategy.

	Search Term
1.	Physical Activity/
2.	Exercise/
3.	(physical activity or exercise). af
4.	Diet/
5.	Obesity/
6.	(diet or obesity or weight).af
7.	Smoking/
8.	Smoking Cessation/
9.	(smok* or cigarette\$ or nicotine or tobacco).af
10.	Alcohol Drinking/
11.	alcohol drinking or alcohol consum*. af
12.	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
13.	Hypertension/
14.	Diabetes Mellitus, Type 2/
15.	Acute Coronary Syndrome/

16.	Acute Kidney Injury/
17.	Liver Failure/
18.	Liver Failure, Acute/
19.	Peripheral Vascular Diseases/
20.	Cerebrovascular Disorders/
21.	(hypertension or diabetes or coronary or renal failure or kidney failure or liver failure or cancer). af
22.	13 or 14 or or 15 or 16 or 17 or 18 or 19 or 20 or 21
23.	Mental Health/
24.	Stress Disorders, Traumatic, Acute/
25.	Anxiety/
26.	Burnout, Professional/
27.	Compassion Fatigue/
28.	Depression/
29.	Depressive Disorder/
30.	Self-Efficacy/

31.	mental health or mental illness or psychological or psychological wellbeing or stress or anxiety or burnout or depression or self-efficacy or self ADJ efficacy
32.	23 or 24 or 25 or 26 or 27 or 28 or 29 or 31
33.	Absenteeism/
34.	Job Satisfaction/
35.	Work Engagement/
36.	Work Performance/
37.	Patient Safety/
38.	sicknessabsen* or absen* or job satisfaction or employee engagement or work performance or staff retention or staff turnover or patient safety or quality of care or patient care.af
39.	33 or 34 or 35 or 36 or 37 or 38
40.	(intervention or lifestyle or behavior* or behavior* change intervention* or behavior* change technique*).af.
41.	(nurs\$ not in-patient\$ not inpatient\$ not patient\$).af.
42.	12 or 22 or 32 or 39
43.	40 and 41 and 42
44.	limit 43 to (human and English language) and yr = "2000-Current"

make the final decision. Participant, setting, intervention, and outcome measurement details will be extracted from each study. Methodological features of trials and reviews will be described using the CONSORT and PRISMA checklists [42] respectively.

### Quality appraisal

Two reviewers will independently review and critique retrieved papers. Risk of bias will be assessed using the Cochrane Handbook classification [43]. Risk of selection, performance, detection, attrition and reporting bias will be assessed. Agreement will be reached through discussion, and if consensus cannot be reached, a third reviewer will make the final decision.

### Methods of synthesis

Studies will be summarised narratively, which is acknowledged as an appropriate approach to take when assessing data from different study designs [44]. We will provide a narrative synthesis of the findings from the included studies, structured around the type of intervention, target population characteristics, type of outcome and intervention content. We will provide summaries of intervention effects for each study. If included studies are sufficiently homogenous, a statistical meta-analytic summary will be produced.

### Analysis of Subgroups or Subsets

It is not possible to specify sub-groups at the outset based, for example, on factors such as age or qualifications.

There may be some intervention studies that target specific populations (such as older nurses, newly qualified nurses, or nurses working in particular settings such as acute or community care). However, we intend that the review itself will identify the range of interventions offered and we will be able to describe the target nursing populations and their settings, the outcomes assessed and evidence of effectiveness, narratively. Narrative synthesis will also enable us to explore different types of study designs.

### Conclusion

The published evidence-base for lifestyle interventions specifically targeting (or including) nurses is currently limited. This systematic review will be the first to assess the effectiveness of lifestyle health promotion interventions with regards both individual (such as physical and psychological health) and organisational outcomes (such as job satisfaction and absenteeism). The review will provide insight into the range of interventions being offered for nurses and how effective they are at improving health, health behaviours, and psychological and/or clinical/health outcomes in nurses. This will help to inform the design and implementation of health and wellbeing services to support nurses and therefore help to improve future workplace health service provision and quality.

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