

# Public mental health and wellbeing interventions delivered by allied health professionals (AHPs): mapping the evidence and identification of gaps. A systematic review

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## Abstract

**Purpose** – *Mental well-being is associated with positive outcomes throughout the life course. This study aims to examine interventions delivered by allied health professionals (AHPs) to alleviate community stressors adversely impacting public mental health and well-being.*

**Design/methodology/approach** – *Review inclusion criteria comprised experimental and qualitative process evaluations of public mental health interventions delivered by AHPs. Electronic searches in Cinahl, Embase, Medline, PsycINFO and the Cochrane Library, were combined with grey literature searches of National Institute for Health and Care Excellence public health guidance. A narrative synthesis and the Effective Public Health Practice Project appraisal tool were used to evaluate the evidence.*

**Findings** – *A total of 45-articles were included in the review describing AHP-delivered interventions addressing social disadvantage, trauma, bullying, loneliness, work-related stress, transitional stress, intersectionality, pain and bereavement. No articles were identified evaluating interventions delivered by operating department practitioners or orthoptists. A conceptual map was developed summarising the stressors, and a typology of public mental health interventions defined including: place-based interventions, discrete/one-off interventions, multi-component lifestyle and social connector interventions and interventions targeting groups at risk of mental health conditions.*

**Research limitations/implications** – *Many mental health conditions begin in childhood, and a strength of the review is the life course perspective. A further strength is compiling a compendium of public mental health outcome measures used by AHPs to inform future research. The authors excluded many articles focussed on clinical interventions/populations, which did not meet review inclusion criteria. While playing a key role in delivering public mental health interventions, clinical psychologists are not defined as AHPs and were excluded from the review, and this may be construed a limitation. Given heterogeneity of study designs and interventions evaluated numerical analyses of pooled findings was not appropriate.*

**Practical implications** – *The review highlights the breadth of community stressors on which AHPs can intervene and contribute in public mental health contexts, stressors which correspond to those identified in UK Government guidance as currently important and relevant to address. The findings can inform developing community public mental health pathways that align with the UK National Health Service (NHS) Long Term Plan, on prevention and early intervention to protect community mental health and well-being. Further can inform the NHS strategic direction for AHPs including informing ways of increasing utilisation of core AHP skills to optimise contributions in public mental health agendas.*

**Social implications** – *It is surprising there were not more AHP delivered evaluations of interventions for other stressors important to address in public mental health settings, for example gambling, domestic violence or that used digital technology, and these are areas for future research. Future research should identify the most active/effective dimensions of multi-component interventions which could be informed by frameworks to guide complex intervention development. The relative paucity of research identified,*

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highlights the predominant focus of research to date on interventions for clinical mental health conditions and populations. The lack of preventative approaches is evident, and an important area for future research to align with UK health and social care priorities.

**Originality/value** – The review highlights AHP-delivered interventions impacting diverse community stressors across the life course. The findings can inform developing public mental health pathways aligned with government health service priorities to protect mental health and well-being, prioritise prevention and early intervention and increase utilisation of AHP skills across public mental health settings.

**Keywords** Community, Interventions, Stressors, Mental well-being, Allied health professional

**Paper type** Literature review

## Introduction

Mental illness is a leading cause of global disease burden (Vigo *et al.*, 2016; Vigo *et al.*, 2019) and a recent report identified mental health conditions as the second most leading cause of years lived with disability (McDaid *et al.*, 2022). Mental health is defined by the World Health Organisation as a state of well-being, in which individuals realise their abilities, learn/work productively, cope with life's stresses, contribute to communities (WHO, 2022) and is associated with better outcomes across the life cycle (Campion, 2019). One in six UK adults report having a common mental health disorder (OHID), and a priority of the UK National Health Service (NHS) is developing a preventative approach towards mental illness (NHS; NHSE).

Public mental health approaches comprise prevention (early treatment, relapse prevention), promotion of mental health/well-being and early intervention (Campion, 2019). The determinants of public mental health are multi-faceted, and understanding the complex layers, interactions and interconnections between different health, social and broader contexts is important for guiding interventions (Eriksson *et al.*, 2018; Prince *et al.*, 2007). For example, experiencing poverty, socio-economic disadvantage and inequality are examples of community stressors that heighten risk of mental illness, while mental illness can lead to deprivation through exposure to further community stressors such as lost employment, damaged relationships and stigma (Knifton and Inglis, 2020). In some population groups risk of mental illness is elevated, for example depression and anxiety among people living with cancer (Niedzwiedz *et al.*, 2019), and common mental health disorders among young pregnant women (Estrin *et al.*, 2019). A recent framework identified 55 determinants of public mental health across four levels: individual, family, community and structural (Dykxhoorn *et al.*, 2022). While a recent review of community-based interventions for promoting mental health among older adults defined intervention types including direct and connector interventions, gateway services and systems approaches to intervention (Lee *et al.*, 2022). Key priorities for public mental health commissioning and practice include delivering interventions addressing diverse sectors and community stressors, for example pressure in the workplace and bullying in schools (Campion, 2019). Examples of public mental health interventions found effective include physical activity for subjective well-being (Wiese *et al.*, 2018) and self-help skills for depression among people with physical health conditions (Matcham *et al.*, 2014).

This review examined public mental health interventions delivered by allied health professionals (AHPs). There are 14 AHPs in the UK NHS (Online Supplementary materials: Table OS1). Regulated by professional councils they provide holistic care across the life course, focussing on prevention and improving health and well-being in diverse settings, for example education, work, voluntary, health, social and independent sectors (NHSE). UK guidance for the strategic development and direction of AHP services highlighted under-utilisation of AHP skills within public health agendas and the importance of maximising their potential and contributions (NHSE, 2022). The review was commissioned to inform strategic direction of UK AHP public mental health services provision however we are confident the findings have relevance internationally. The aim of the review was to identify and map:

- the stressors impacting public mental health across diverse sectors and populations; and
- AHP-delivered interventions to address the stressors and evidence of impact on mental health/well-being.

Finally, to develop a conceptual map summarising the findings.

## Method

### *Study design*

The review was reported according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page *et al.*, 2021) (PROSPERO registration: CRD42021295880).

Literature searches were conducted in 2022 for experimental and qualitative process evaluations of public mental health interventions delivered by AHPs. Review inclusion criteria are shown in Table 1. Electronic database searches of Cinahl, Embase, Medline, PsycINFO and the Cochrane Library, were combined with grey literature searches of National Institute for Health and Care Excellence public health guidance. The search strategy included combinations of the following:

- public mental health keywords (e.g. prevention, early intervention, mental well-being, social connectedness/isolation, resilience, positive mental health);
- AHP keywords; and
- intervention keywords (e.g. programme).

The Medline search strategy is shown in Figure OS2. Articles were sifted at title and abstract then 20% of full texts independently appraised by two reviewers; disagreements were discussed until consensus was reached.

The Effective Public Health Practice Project appraisal tool was used to evaluate risk of bias in quantitative studies ([www.ehphp.ca/quality-assessment-tool-for-quantitative-studies/](http://www.ehphp.ca/quality-assessment-tool-for-quantitative-studies/)), and the Critical Appraisal Skills Programme checklist for risk of bias in qualitative process evaluations ([www.casp-uk.net/casp-tools-checklists/](http://www.casp-uk.net/casp-tools-checklists/)). Quality appraisals were not used to decide which articles to include or exclude from the review, rather the appraisal tools were used to inform interpretation of findings reported in each included study, for example that there was no control group which may have introduced bias.

Data were synthesised narratively in four phases (Popay *et al.*, 2006): a theoretical approach was defined, information extracted from articles was tabulated, comparisons across studies were made and a formal assessment of bias completed. The approach was informed by UK Government public mental health priorities, and previous reviews of public

**Table 1** Review inclusion and exclusion criteria

Participants	<i>Adults and children</i>
<i>Intervention</i>	Public mental health interventions delivered by AHPs
<i>Comparator</i>	Another or no intervention
<i>Outcome</i>	Changes in public mental health indicators (e.g. scores on standardised measures, reduced services use) and measures of acceptability
<i>Study design</i>	Experimental and qualitative process evaluations of public mental health interventions
<i>Exclusion</i>	Exploratory qualitative studies; clinical interventions; no outcome measure relevant to public mental health
Source: Table by authors	

mental health determinants and interventions (Campion, 2019; Dykxhoorn *et al.*, 2022; Lee *et al.*, 2022). The findings were summarised in a conceptual map.

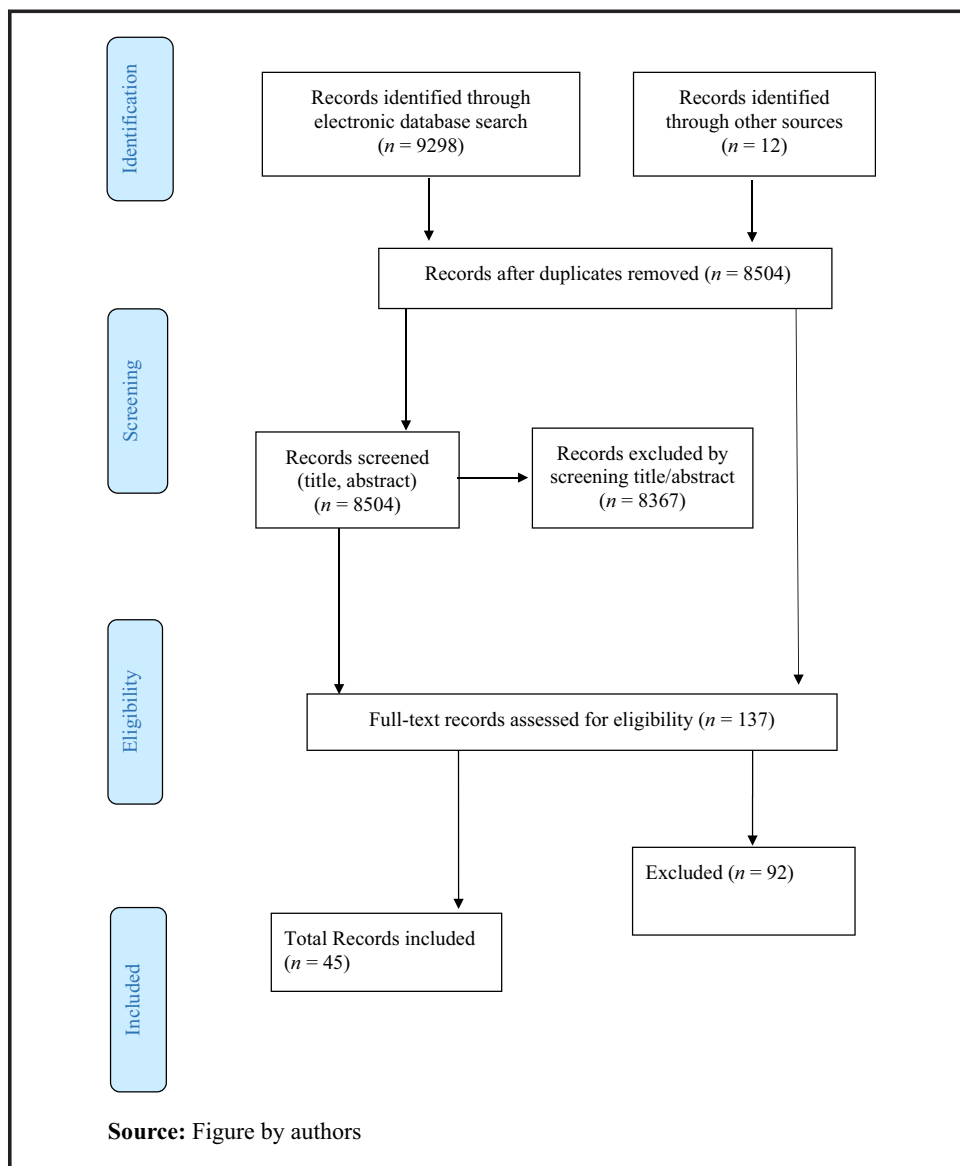
### Stakeholder engagement/consultation

We consulted an online meeting of the Public Health Strategy Board representing UK AHP professional bodies regarding aspects of the study and contacted AHP networks for advice on any articles they were aware of.

### Results

A total of 9,298 articles were identified in the searches; 8,504 after removal of duplicates. A total of 137 articles were evaluated at full text, and 45 selected for inclusion in the review (Figure 1). The references for articles included in the review are shown in the online

**Figure 1** PRISMA flowchart summary of selection process



supplementary materials (OS6). Bias assessments are shown in Table OS4, and outcome measures used in studies to assess change in mental well-being are shown in Table OS5. A total of 15 studies had an overall low risk of bias; most studies used at least one structured outcome measure to assess changes in mental well-being, and 22 studies used a randomized controlled trial (RCT) design. Study characteristics and findings are shown in Tables OS2-3.

### ***Place-based interventions at individual and organisation level: in the workplace***

Eight studies evaluated place-based interventions (those delivered in a specific location for example in the workplace, or in higher education), most aimed at developing self-help/care skills, and delivered at individual and organisational level in emergency, palliative, intensive and dementia care workplaces. Five studies were RCTs, focussed on work-related stress. Stress and positive coping improved following osteopathic manipulation in emergency responders ( $n = 9$ ) (Abraham *et al.*, 2021). After music therapy there were significant improvements in mental well-being among workers on sick leave (Beck *et al.*, 2015), and in stress, fatigue and coping-style among intensive care nurses (Ozgundodu and Metin, 2019). Significant improvements in emotional exhaustion were shown in palliative care workers after art therapy (Ho *et al.*, 2021), and among dementia carers receiving a physiotherapist-delivered psycho-education and relaxation intervention (Barbosa *et al.*, 2015).

Palliative care staff were confident in their ability to access support/supervision after an occupational therapist-led workplace resilience strategy (Apostol *et al.*, 2021), and self-efficacy and perceived support improved among a single cohort of university employees receiving physiotherapist-delivered health coaching (Bezner *et al.*, 2017). Finally, distress was significantly reduced among trauma-exposed mental health professionals receiving art therapy (Segal-Engelchin *et al.*, 2020). The latter three studies, however, lacked a comparator group so risk of bias was elevated.

### ***Place-based interventions to develop self-help/care skills: community, education and workforce training settings***

Socio-economically disadvantaged parents showed significant improvements in mental well-being e.g. reduced irritability after music therapy (Nicholson *et al.*, 2008), and there were improvements in resilience among children experiencing trauma after art therapy (Sitzer and Stockwell, 2015). However, both studies lacked a control group so again there was some risk of bias.

Four studies evaluated interventions delivered in vocational training settings. An RCT evaluating physiotherapist-delivered training for physiotherapy trainees, demonstrated significant increases in resilience and positive emotions; the wait-list control was a study strength (Mejia-Downs, 2020). In a small study ( $n = 14$ ) evaluating mindfulness for radiography trainees, positive non-significant changes in mental well-being were shown (Clarkson *et al.*, 2019). A short music therapist-delivered intervention for a cohort of music therapy students showed significant decreases in stress, anxiety and personal vulnerability (Fiore, 2018). Resilience among trainees improved three-months after a paramedic-developed self-guided resilience resource but was un-sustained six-months later (Vaughan *et al.*, 2020).

Of two community delivered RCTs recruiting children, inattention reduced after art therapy (Malboeuf-Hurtubise *et al.*, 2021) and anxiety significantly reduced after an occupational therapy group intervention (Tokolahi *et al.*, 2018). A strength of the latter study was the wait-list control, all participants accessing the intervention.

### ***Discrete interventions delivered to individuals***

Five studies, including four RCTs evaluated discrete (“one-off”) interventions delivered to individuals. In three studies evaluating the effectiveness of insoles/orthoses delivered by podiatrists and orthotists; some improvements in sleep and function were shown but no significant change in mental well-being (Burns *et al.*, 2006; Rasenberg *et al.*, 2021; Wrobel *et al.*, 2015). This was possibly because the primary outcome was pain/function, with mental well-being a secondary outcome measured (in two studies) using the 36-Item Short-Form Health Survey (SF-36) which focusses on general health. Sleep significantly improved in university students after an osteopathic intervention; the RCT design was a strength but the sample size ( $n = 28$ ) possibly limited representativeness (Wiegand *et al.*, 2015). Finally, acceptability and positive change in affect were demonstrated after virtual reality art therapy for trauma, however, the within-group design potentially introduced bias (Frewen *et al.*, 2020).

### ***Multi-component lifestyle interventions***

In three RCTs of occupational therapist-delivered interventions for adults experiencing age-related changes, significant improvements in role/social functioning, emotional and mental health were demonstrated (Clark *et al.*, 2001, 1997, 2012). A physiotherapist-delivered multi-component exercise intervention for adults (average age: 79.5 years) demonstrated cognitive, emotional and social networking improvements in a strongly designed study (Tarazona-Santabalbina *et al.*, 2016).

Design limitations may have introduced bias in the next five studies. A multi-component obesity intervention delivered to a cohort of adults by dietitians and physiotherapists, significantly improved mental health (Batsis *et al.*, 2021). A “healthy habits” occupational therapy program for university students, significantly improved well-being, self-compassion and growth mind-set (Hunt and Coombes, 2021). An 8-months occupational therapist-delivered life-style programme for a cohort of adults experiencing age-related changes showed upward trends in quality of life (Mountain *et al.*, 2008), and participants described benefits to mental well-being, e.g. improved perspective (Chatters *et al.*, 2017). Finally, adults >65 years of age, showed significantly improved mental health and positive trends for psychological well-being, after an occupational therapy health promotion intervention although between-group differences were non-significant (Johansson and Björklund, 2016).

### ***Interventions for groups with elevated risk of mental health conditions***

Seven studies evaluated interventions for groups with elevated risk of developing mental health conditions (pregnant and ethnic minority women, veterans, older adults and students). Three RCTs evaluated physiotherapist-delivered exercise programmes during pregnancy; a reduction in depression was demonstrated in two studies (Robledo-Colonia *et al.*, 2012; Songøygard *et al.*, 2012) while the third study with low risk of bias showed no impact on mental well-being (Gustafsson *et al.*, 2016). An exercise programme delivered to a single cohort of Somali women resulted in no change in quality of life, though acceptability was good (e.g. “we exercise, and have fun together”) (Thulstrup *et al.*, 2021). A multi-modal art/music therapy suicide prevention intervention for veterans, reduced suicidal ideation, depression and hopelessness (Vitale *et al.*, 2021). A qualitative evaluation of AHP-delivered workshops on depression and dementia delivered to 1100 adults demonstrated acceptability (e.g. “I liked the information on coping with stress”) though impact on intent to act to improve mental well-being was less evident (Susman *et al.*, 2006). Finally, while art therapy for university students was acceptable there was no impact on indicators of mental well-being (Pizarro, 2004).

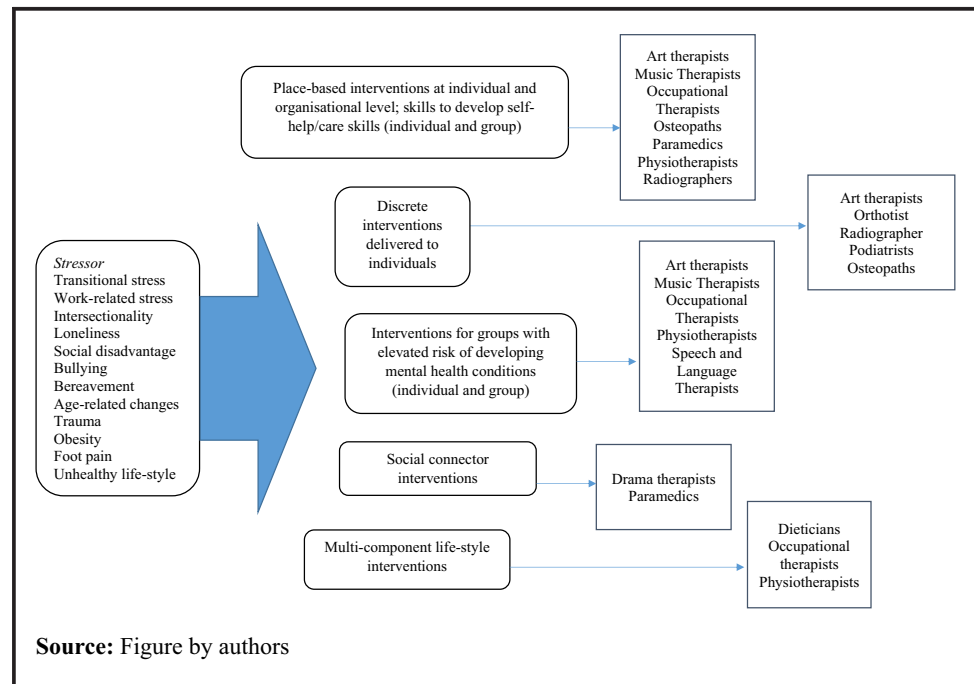
A further six studies evaluated interventions for children from groups with elevated risk of mental health conditions; stressors included intersectionality, trauma, bullying, loneliness and bereavement. Of these, two RCTs evaluated the impact of speech therapy (Mallick *et al.*, 2018) and art therapy on bullying (Yan *et al.*, 2019); however, significant reductions in bullying were only demonstrated in children after art therapy (Yan *et al.*, 2019). The art therapy study assessed mental well-being with several outcome measures (Yan *et al.*, 2019), while the speech therapy study used one outcome measure so some effects may have been missed (Mallick *et al.*, 2018). Improved self-concept after art therapy was demonstrated in refugee and immigrant children in a study with low risk of bias (Rousseau *et al.*, 2005). Positive but non-significant changes in depression (Hilliard, 2001) and significantly reduced grief were shown in bereaved children after music therapy (Hilliard, 2007), however both studies were quasi-experimental with moderate risk of bias. A suicide prevention programme for indigenous children, resulted in positive changes in affect pre/post-intervention (e.g. 57% reported moving from stressed to happy) (Doll and Brady, 2013); however, the outcome measure lacked reliability data, and there was no control group.

### Social connectors

Two studies evaluated social connector interventions; emotion-focused coping increased significantly after paramedic-facilitated peer support groups on work-related stress for trainees (Pinks *et al.*, 2021). A study strength was using multiple outcome measures. Finally, adolescents' self-concept improved and loneliness decreased after drama therapy, though the non-randomised design potentially introduced bias (Orkibi *et al.*, 2017).

A conceptual map was developed summarising community stressors, public mental health interventions addressing the stressors and the AHPs delivering them (Figure 2).

**Figure 2** Conceptual map showing stressors addressed, intervention type and AHPs delivering them





## Discussion

The review has identified a broad range of AHP-delivered interventions addressing diverse community life course stressors in the public mental health domain. The stressors the AHP-delivered interventions aimed to address included trauma, transitional stress, social disadvantage, intersectionality, bereavement, bullying, loneliness, work/age-related stress, pain, obesity and unhealthy lifestyles. Intervention types included:

- place-based (delivered at work, school, higher education);
- discrete interventions for individuals;
- multi-component lifestyle interventions;
- interventions targeting groups with elevated risk of mental illness; and
- social connectors.

Tables OS2–3 show which articles addressed each stressor area and intervention type.

The community stressors identified in the review that AHPs intervened upon, correspond to those prioritised for intervention in UK Government guidance. This includes mental health support for school children [Department for Education (DfE), 2018]; 11 studies reviewed evaluated interventions for children targeting trauma, transitional stress, social disadvantage, intersectionality, bereavement, bullying and loneliness. Bullying is a priority for intervention (Campion, 2019), as is loneliness, and promotion of social connection via for example social prescribing (Drinkwater *et al.*, 2019; NHSE; RCOT). A priority of the NHS Long Term Plan is transforming perinatal mental health services; three studies reviewed evaluated interventions during pregnancy (Gustafsson *et al.*, 2016; Robledo-Colonia *et al.*, 2012; Songøygard *et al.*, 2012). Suicidality is a mental health priority (NHSHEE; OHID), and the review identified AHP-delivered interventions for suicidality in children and veterans (Doll and Brady, 2013; Vitale *et al.*, 2021).

A multi-layered approach is described as most appropriate to understand the determinants of public mental health, and to guide intervention design and delivery (Campion, 2019; Dykxhoorn *et al.*, 2022; Eriksson *et al.*, 2018). In some of the studies reviewed, multi-component interventions facilitated addressing multi-layered determinants of public mental health, though not without challenges, including identifying the most active/effective components, and resources, for example some interventions were delivered over several months (Mountain *et al.*, 2008). Some interventions were delivered collaboratively between different AHPs; dietitians and physiotherapists delivered an intervention for obesity (Batsis *et al.*, 2021), and physio/occupational and speech and language therapists delivered workshops for dementia and depression-related stressors (Susman *et al.*, 2006). This highlights the potential to address the multi-layered determinants of public mental health through merging the unique skills-sets offered by different AHPs (Dykxhoorn *et al.*, 2022; Susman *et al.*, 2006). This is especially appropriate where intersectionality for example obesity, ethnicity and gender (Thulstrup *et al.*, 2021) compounds community stressors. The determinants of public mental health interconnect across broad contexts (Dykxhoorn *et al.*, 2022; Eriksson *et al.*, 2018) and importantly the review identified interventions overlapping different settings and sectors. For example, mindfulness was evaluated for trainee radiographers (Clarkson *et al.*, 2019), and health coaching for university employees (Bezner *et al.*, 2017), bridging public mental health and occupational health.

### *Strengths, limitations and future research*

Many mental health conditions begin in childhood, and a strength of the review is the life course perspective (Kessler *et al.*, 2007), a further strength is compiling a compendium of mental health outcome measures used by AHPs that can inform future research. While



the review area was broad and a scoping review may have been used, a study strength is completing a systematic review allowing mapping the evidence and answering a specific question. We excluded many articles focussed on clinical interventions/populations, which did not meet review inclusion criteria. While playing a key role in delivering public mental health interventions, clinical psychologists are not listed in NHSE's definition of AHPs and were excluded from the review, and this may be construed a limitation. Given heterogeneity of study designs and interventions evaluated it was not appropriate to complete numerical analyses of pooled findings. The intention was to capture international literature; however, the search terms used the UK NHSE's titles for AHPs, and articles evaluating public mental health interventions delivered by practitioners working as AHPs in other countries but with different professional titles may have been missed. AHPs do not always have the same roles and regulatory requirements in different countries. In the UK, an AHP is broadly speaking a postgraduate, registered and regulated health professional who has usually been trained to work in the health system during the pre-registration period. This may not always be the case in countries where AHPs have different definitions.

Future research should identify the most active/effective dimensions of multi-component interventions which could be informed by frameworks to guide complex intervention development (Skivington *et al.*, 2021). It is surprising there were not more AHP delivered evaluations of interventions for other stressors important to address in public mental health settings, for example gambling, domestic violence or that used digital technology, and these are areas for future research. The relative paucity of research identified, highlights the predominant focus of research to date on interventions for clinical mental health conditions and populations. The lack of preventative approaches is evident, and an important area for future research to align with UK health and social care priorities.

## Conclusions

The review highlights the breadth of community stressors on which AHPs can intervene and contribute in public mental health contexts, stressors which correspond to those identified in UK Government guidance as currently important and relevant to address. The findings can inform developing pathways that align with the UK NHS Long Term Plan, on prevention and early intervention to protect community mental health and well-being. Further, the findings can inform the NHS strategic direction for AHPs including informing ways of increasing utilisation of core AHP skills in order to optimise contributions in public mental health agendas.

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### Supplementary materials

The supplementary materials of this article can be found online.

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