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The motivational dimension in interventions to improve well-being at work among primary medical care staff – A systematic review.

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075799
Article Type:	Original research
Date Submitted by the Author:	26-May-2023
Complete List of Authors:	Florez, Adriana; Hospital de Palamós, ABS Palamos Villar-Hoz, Esperanza; Universitat de Girona, Psychology
Keywords:	Occupational Stress, Primary Health Care, Physicians, Systematic Review

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Title

The motivational dimension in interventions to improve well-being at work among primary medical care staff – A systematic review.

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Key points:

Question:What type of interventions are used to improve the well-being, in the workplace, of PCP (primary care physicians)? Which well-being indicators are used and how are these assessed? What theories and what mechanisms of action (MoA) support such interventions? And what role does individual motivation play in these interventions?

Findings: With the evidence found in the literature, it is difficult to assess the effectiveness of the interventions used, due to their heterogeneity and underlying biases. Selection biases are evident since participants in the interventions were self-selected, and could therefore be more motivated to improve their well-being than non-participants. The most commonly used well-being indicators refer to a lack of well-being, such as burnout and distress; however, the results are evaluated only from the point of view of work effectiveness, leaving other components of motivation unassessed.

Purpose: This study serves as a theoretical foundation for the development of subsequent research aimed at designing a specific tool to assess well-being and motivation among primary medical care personnel.

Keywords: Physicians, Primary Care, Psychological Well-Being, Psychosocial Intervention, Motivation.

Word count: 2597

Abstract:

Objective: The well-being of primary care physicians (PCP) has become an object of concern for governments due to a staff shortages and high staff turnover. The objective of this study is to carry out a systematic review of individualized interventions aimed at improving the well-being of PCP, which allows us to determine (1) the type of interventions being carried out; (2) the well-being indicators being used, and the instruments used to assess them; (3) the theories proposed to support the interventions and the mechanisms of action (MoA) put forward to explain the results obtained; and (4) the role that individual motivation plays in the interventions to improve well-being among PCP.

Design: Systematic review.

Eligibility criteria: Clinical trials on interventions aimed at improving the well-being of PCP.

Information sources: Searches in English, French, and Spanish of studies published between 2000 and 2022 were carried out in Pubmed, Scopus, and WOS.

Results: From the search, 250 articles were retrieved. The two authors each reviewed the articles independently, duplicate articles and those that did not meet the inclusion criteria were discarded. A total of 14 studies that met the criteria were included: six randomized clinical trials, four controlled

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clinical trials, and four unique cohorts, with a before-and-after assessment of the intervention, involving a total of 655 individuals participating in the interventions. A meta-analysis was not possible due to the heterogeneity of the studies. Conclusions: The information evaluated is insufficient to accurately assess the effectiveness of the interventions due to problems of design bias, sample size, and the lack of adequate controls for variables, such as *socialization* and *support among colleagues*. More studies need to be carried out on the subject to determine the effectiveness of the interventions, the mechanisms of action on the results, and the motivation of the participating PCP.

INTRODUCTION:

Primary care physicians (PCP) play a key role within the health system. They are often the first point of contact with the patient; in many cases, they know them personally and are aware of their social and family environment. PCP thus become a vital link in the chain of hospital treatment and social health care, providing patients with follow-up and support.¹

However, in recent years it has become a challenge to cover all the PCP posts required for an adequate patient/doctor ratio¹ and to reduce staff turnover. PCP shortages are a considerable problem, with impacts on public health around the world. One reason put forward to explain the problem is the high percentage of primary care personnel at risk of burnout.² In a study carried out by the European General Practice Research Network (EGPRN) on PCP throughout Europe, it was shown that 43% of professionals suffered emotional exhaustion due to work and that 12% obtained high scores in the three components of burnout (emotional exhaustion; depersonalization; and personal accomplishment).³

Various studies have been carried out to assess whether these elevated levels of burnout among PCP influences the medical care offered to the patient.⁴ A systematic review carried out in 2019, found that exhaustion among healthcare professionals increases the possibility of medical errors and that this can affect patient safety.⁵ It was also shown that burnout impinges on the workers' quality of life, leading to increases in absenteeism from exhaustion, and more staff leaving the healthcare profession. This poses considerable difficulties for patient care – the central pillar of primary care. An earlier systematic review on burnout in PCP, carried out in 2018, recommended broadening approaches aimed at improving health systems so as to include, as an objective, improving the lives of health professionals and their experience at work.⁶ This approach coincides with a paradigm shift in occupational health studies, which has led to focussing attention not only on the prevention of burnout and the risks derived from work, but also on fostering the health and well-being of workers. Expanding the focus of occupational health towards a perspective centred on the well-being of the worker has been influenced by, among others, United Nations recognition of health and wellbeing as a sustainable development goal; The World Health Organization's model for action⁷; the policy guidelines published by the UK's

National Institute for Health and Care Excellence aimed at improving workers’ health and well-being⁸; and the promotion of healthy organizations based on the contributions of positive psychology⁹. With this new approach, improving the health and well-being of workers constitutes an end in itself; it is not subordinated solely to the productive demands of the organization, but oriented towards a relationship of “mutual gains” for all stakeholders.¹⁰

In this context, it no longer makes sense to make a distinction between person-centred interventions and contextualized interventions acting on organizational and environmental determining factors: the two strategies – aimed at improving well-being – are complementary. Individual interventions are still necessary to foster motivation and facilitate measures that are committed to the goals of personal, organizational and social well-being.

Although notable progress has been made in recent years both in research and in the definition and operationalization of occupational well-being as a construct,¹¹ less attention has been devoted to the role of motivation and individual agency in research on interventions aimed at improving it. The objective of this study is to carry out a systematic review to evaluate the current research available on individualized interventions aimed at improving the well-being of PMC personnel based on the following questions: (1) What type of interventions are being carried out to improve the well-being of PCP? (2) Which well-being indicators are used to assess outcomes, and which instruments are used to assess them? (3) What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained? And (4) what role does individual motivation play in interventions to improve well-being among PCP?

Individual well-being is defined “as an integrative concept that characterizes quality of life with respect to an individual’s health and work-related environmental, organizational, and psychosocial factors. Well-being is the experience of positive perceptions and the presence of constructive conditions at work, and beyond, that enables workers to thrive and achieve their full potential”.¹¹ This definition includes the two theoretical traditions that have dealt with the study of well-being: Hedonic Well-Being (HWB) and Eudaimonic Well-Being (EWB).¹² Hedonic well-being is usually linked to the concept of Subjective Well-Being (SWB), and includes the components of pleasant affect, unpleasant affect and life satisfaction.¹³ On the other hand, from a eudaimonic perspective, well-being is considered as the individual ideal that provides purpose and direction to one’s life, through personal growth and self-realization.¹⁴

METHODS

Data sources, search strategy and study selection

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A systematic review protocol was designed in line with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).¹⁵ We consulted a specialist in thematic documentation in Psychology from [omitted for blind peer review] in order to define the search descriptors. The search was carried out in the Pubmed, Scopus and WOS databases, in October 2022.

Terms were selected following the PICO strategy (Population, Intervention, Comparison, Outcome). Population was defined as currently active, primary medical care (PMC) personnel, for which the Medical Subject Headings (MeSH) terms used were: “primary care physician” OR “general practitioner” OR “GP” OR “family physician” OR “family practitioner” OR “family doctor”. Only interventions focused on the individual were included in the definition, discarding articles in which interventions focussed on changes in the organization or in the health system, and the MeSH term: “intervention” was used for the search. The main outcomes indicators referred to motivation and well-being at work, for which various MeSH terms appearing in titles, abstracts or keywords were used: “job well-being” OR “work engagement” OR “workplace commitment” OR “job satisfaction” OR “workplace enjoyment” OR “workplace motivation” and other synonyms. The search strategy is shown in supplemental Figure 1.

The search was carried out using MeSH terms, and manually, and was limited to quantitative experimental and quasi-experimental articles published between 2000 and 2022, and available in Spanish, English and French. Only articles in which the target population were PCP were included and, of those where other members of the primary care team participated, only the data corresponding to PCPs were taken into account. Articles where interventions were carried out to improve the well-being of in-house doctors in training were discarded. Also excluded were articles in which the intervention was carried out at the organizational level or those in which the primary outcome did not refer to medical well-being. Supplemental Figure 2 shows the process of identification, screening and selection of the articles.

250 articles were found that met the criteria of publication date and language, and these were manually reviewed to exclude duplicates, leaving 228 abstracts. A further 205 were discarded because, on closer inspection, they did not meet the inclusion criteria. The full texts of the 23 selected articles were retrieved and then read in depth, and nine of these were discarded for not meeting the inclusion criteria. For example, studies such as the one by Rees et al¹⁶ were not included because they involved mixed designs in which the qualitative component was used to evaluate the outcome; in total there were five articles discarded for this reason. Four other articles were discarded because they focussed on a different primary outcome, for example the objective of Dunn et al¹⁷ was to improve the well-being of the organization and the quality of patient care.

All the articles in the final selection were then read in detail and the information extracted was recorded in a summary table. Each author of this review first read the texts independently, and then the information was pooled.

Data extraction and risk of bias

The search was carried out independently by each author, AF and EV, using the MeSH terms and by manual search. Subsequently, and again independently, we used the Effective Public Health Practice Project (EPHPP)¹⁸ to assess the quality of the selected studies; the discrepancies in the items were discussed and agreed upon. Table 1 shows an evaluation of the quality of the studies using the EPHPP.

Table 1 Quality analysis based on the tool EPHPP.¹⁸

		A	B		C	D	E	F	TOTAL
	Author (year of publication)	R	DESIGN	R	R	R	R	R	
1	West et al (2014) ₁₉	W	RCT	S	S	M	S	S	M
2	McGonagle et al (2020) ₂₀	W	RCT	S	S	W	S	M	W
3	West et al (2021) ₂₁	W	RCT	S	S	M	S	S	M
4	Asuero et al (2014) ₂₂	W	CCT	S	S	M	S	S	M
5	Cheng et al (2015) ₂₃	M	RCT	S	S	S	S	S	S
6	Schroeder et al (2016) ₂₄	W	RCT	S	S	M	S	M	M
7	Gardiner et al (2004) ₂₅	W	CCT	S	S	W	S	M	M
8	Gardiner et al (2013) ₂₆	W	CCT	S	S	W	S	W	W
9	Holt et al (2006) ₂₇	M	CCT	S	S	W	S	M	M
10	Amutio et al (2015) ₂₈	W	RCT	S	S	M	S	S	M
11	Fortney et al (2013) ₂₉	W	CBA	M	S	W	S	M	W
12	Krasner et al (2009) ₃₀	W	CBA	M	W	W	S	M	W
13	Montero-Marín et al (2017) ₃₁	W	CBA	M	W	W	S	W	W
14	Wietmarschen et al (2018) ₃₂	W	CBA	M	W	W	S	W	W

A: Selection bias; B: Study design; C: Confounders; D: Blinding; E: Data collection method; F: Withdrawals and dropouts; R: Rating; S: strong; M: Moderate; W: Weak; RCT: Random clinical trial; CCT: Control clinical trial; CBA: Control before and after.

The EPHPP¹⁸ scale was applied to assess the quality of the studies in the articles. 42% of them were classified as weak in the general classification; however, as can be seen in Table 1, this is largely due to the fact that most of the studies (85%) were classified as weak in category A, which assesses bias in the selection of the participants because most of them were self-selected access.

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Of the 14 studies, 71% had a strong study design – either random clinical trials (RCT) or clinical control trials (CCT) – while the remaining 29% were single cohort studies (CBA: control before and after). All of the studies scored strongly in Category E, data collection methods, while 58% of them scored weakly in Category D, blinding. The number of participants varied highly in the studies, ranging from 9 to 120 participants.

FINDINGS

What type of interventions are being carried out to improve the well-being of PCP?

Taking as a reference the design strategy of each intervention and its objective, the studies were classified according to the type of interventions carried out. Mindfulness was used in 50% of the studies, while the other 50% used various strategies such as coaching, discussion groups, gratitude journals, and cognitive-behavioural training. Table 2 shows the interventions used in the studies, along with the authors, the date of the study, the study design and the sample size.

Table 2 Type of intervention and study design.

	Study ID	Design	N°	Intervention
1	Amutio et al (2015) ₂₈	RCT	21	Mindfulness
2	Schroeder et al (2016) ₂₄	RCT	15	Mindfulness
3	Asuero et al (2014) ₂₂	CCT	43	Mindfulness
4	Fortney et al (2013) ₂₉	CBA	30	Mindfulness
5	Krasner et al (2009) ₃₀	CBA	70	Mindfulness
6	Montero-Marin et al (2017) ₃₁	CBA	58	Mindfulness
7	Wietmarschen et al (2018) ₃₂	CBA	54	Mindfulness
8	Cheng et al (2015) ₂₃	RCT	34	Gratitude diary
9	West et al (2014) ₁₉	RCT	37	Discussion groups
10	McGonagle et al (2020) ₂₀	RCT	29	Coaching

11	West et al (2021) ₂₁	RCT	64	Discussion groups
12	Gardiner et al (2004) ₂₅	CCT	85	Cognitive Behavioural training
13	Gardiner et al (2013) ₂₆	CCT	69	Cognitive Behavioural coaching
14	Holt et al (2006) ₂₇	CCT	106	E-mail feedback about individual distress levels and a self-help sheet

RCT: random clinical trial; CCT: control clinical trial; CBA: control before and after; N°: number PCP participants in group intervention.

Although half of the articles employ mindfulness programs in their intervention strategy, it should be noted that, in most cases, a multi-component program is employed which includes various other elements such as psychoeducation, discussion groups, narrative and appreciative inquiry exercises on communication skills. This makes it difficult to determine the impact of each of the different elements of the program on the results.

Which well-being indicators are used to assess outcomes, and which instruments are used to assess them?

The main well-being indicators used in the articles to assess the outcomes of the interventions were identified, and the instruments used to assess them were recorded. These indicators may measure positive aspects (e.g. resilience) or negative aspects (e.g., burnout). Only indicators assessed in at least two studies were recorded in the summary table. Table 3 indicates how commonly these indicators were used in the selected articles, and the instruments used to assess them.

Table 3 Well-being indicators, the number of studies that used them, and the instruments used to assess them.

	Well-being indicators	N° of Studies	Instruments used to assess indicators
1	Mindfulness	5	FFMQ, MAAS
2	Job Satisfaction	3	PWS
3	Meaning at Work	2	EWS
4	Resilience	3	BRS
5	Compassion	6	SCB SC JSEP (compassion subscale)

6	Empowerment	3	EWS
7	Engagement	2	JES
8	Empathy	3	JSPE
9	Self Reflection	2	Diaries
10	Psychological Capital	2	PCS
11	Burnout	9	MBI, BCSQ
12	Distress	10	PSS, SIG, GHQ-12, PANAS
13	Depression	7	PRIME-M, PCS, POMS, GHQ-12
14	Mood disturbance	2	POMS

Positive and negative well-being indicators have been marked with a different colour. *N° of studies* refers to the number of studies that assessed the indicator (only those assessed in more than two studies were recorded in the table); *FFMQ*: Five Facet Mindfulness Questionnaire³³; *MAAS*: Mindful Attention Awareness Scale³⁴; *PWS*: Physician Worklife Survey³⁵; *EWS*: Empowerment at Work Scale³⁶; *BRS*: Brief Resilience Scale³⁷; *SCBCS*: Santa Clara Brief Compassion Scale³⁸; *JES*: Job Engagement Scale³⁹; *JSEP*: Jefferson Scale of Physician Empathy⁴⁰; *MBI*: Maslach Burnout Inventory⁴¹; *BCSQ*: Burnout Clinical Subtypes Questionnaire⁴²; *PSS*: Perceived Stress Scale⁴³; *SIG*: Stress In General scale⁴⁴; *GHQ-12*: General Health Questionnaire 12⁴⁵; *PANAS*: positive and negative affect⁴⁶; *PRIME-M*: Primary Care Evaluation of Mental Disorders⁴⁷; *PCS*: Psychological Capital Questionnaire⁴⁸; *POMS*: Profile Of Mood States⁴⁷.

Sixteen indicators that were used to assess well-being among PCP were identified. Two of these, *social support* and *fatigue*, are not listed in Table 3 since they were only assessed in a single study. Distress and burnout, as indicators of lack of well-being, were used by nearly all of the studies: 71% evaluated distress and 64% burnout, whereas only one of the studies did not evaluate either aspect. The Maslach Burnout Inventory⁴¹ was applied in 57% of the studies evaluated, and the Perceived Stress Scale⁴³ in 35%.

Some of the indicators used in the studies referred to positive health aspects were: mindfulness, job satisfaction, meaning at work, resilience, compassion, empowerment, engagement, empathy, self reflection and psychological capital. A number of different scales were employed to measure these parameters before and after the intervention. Moreover, 21% of the studies used their own scales to evaluate the interventions.

What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained?

Table 4 lists the theoretical foundations supporting the interventions carried out in the studies in this review. Mindfulness programs are based mostly on the program designed by Kabat-Zinn (Mindfulness-Based Stress Reduction, MBSR).⁴⁹ Regarding the rest, all the proposed interventions take a cognitive-behavioural approach. Although most of the works include some specific theoretical background, the

focus of the interventions is mainly pragmatic, and is not aimed at verification or theoretical construction.

Table 4 Theoretical models and mechanisms of action proposed for the reviewed interventions.

	Author(s) (publication year)	Theoretical background	Proposed MoAs
1	West et al (2014) ¹⁹	Not specified (previous literature)	<ul style="list-style-type: none">- Self-awareness- Self-reflection- Meaning- Values clarification- Personal resources- Small group discussion and reflection- Community building- Enhanced sense of connectedness
2	McGonagle et al (2020) ²⁰	Positive psychology – PERMA model (Seligman & Csikszentmihalyi, 2000; Seligman, 2012)	<ul style="list-style-type: none">- Building personal resources and resilience- Reframing- Setting client-centred goals- Setting client-centred action plans- Using strengths in new ways- Mindfulness reflections- Gratitude reflections- Promoting feelings of empowerment and self-efficacy- Job crafting- Positive emotions- Engagement- Positive relationships- Meaning- Achievements
3	West et al (2021) ²¹	Not specified (previous literature)	<ul style="list-style-type: none">- Meaning- Community building- Social connection- Topics discussion
4	Martín-Asuero et al (2014) ²²	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	<ul style="list-style-type: none">- Enhanced self-awareness- Psychological flexibility- Emotional self-regulation
5	Cheng et al (2015) ²³	Transactional model of stress and coping (Lazarus & Folkman, 1984)	<ul style="list-style-type: none">- Positive thinking- Active coping- Seeking social support- Decreased negative emotions- Reduction of materialistic pursuits- Enhanced accessibility to positive memories- Improved relationships- Enhanced spiritual well-being

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6	Schroeder et al (2016) ²⁴	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008; Fortney et al., 2013)	<ul style="list-style-type: none"> - Intentional regulation of attention and awareness of the present moment - Nonjudgmental and curious willingness to experience contents of the present moment - Compassion skills - Communication skills (SLO)
7	Gardiner et al (2004) ²⁵	Cognitive Behavioural Theory Stress and Coping	<ul style="list-style-type: none"> - Training of specific coping styles (improved logical analysis and problem solving; decreased emotional discharge)
8	Gardiner et al (2013) ²⁶	Cognitive Behavioural Coaching	<ul style="list-style-type: none"> - Self-management skills - Attitudinal changes - Psychological hardiness - Decreased perceived loneliness feelings
9	Holt et al (2006) ²⁷	Transtheoretical Theory of Change (Prochaska & DiClemente, 1984)	<ul style="list-style-type: none"> - Feedback on distress assessment results - Consciousness raising about one's own health and emotional arousal
10	Amutio et al (2015) ²⁸	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	<ul style="list-style-type: none"> - Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills
11	Fortney et al (2013) ²⁹	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008)	<ul style="list-style-type: none"> - Being more present - Mindful attitudes - Communication skills - Compassion for self and others
12	Krasner et al (2009) ³⁰	Theory of mindful practice (Epstein, 1999)	<ul style="list-style-type: none"> - Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills
13	Montero-Marín et al (2017) ³¹	(Modified version of MBSR) (Kabat-Zinn, 1982; Kabat-Zinn et al., 1985)	<ul style="list-style-type: none"> - Non-judgemental awareness of moment-to-moment experience - Attention to one's current actions - Emotional self-regulation - Acquisition of personal resources
14	Wietmarschen et al (2018) ³²	(Modified version of MBSR) (Kabat-Zinn, 1990)	<ul style="list-style-type: none"> - Attention - Self-regulation - Values clarification

		<ul style="list-style-type: none">- Psychological flexibility- Increased awareness of one’s own feelings and thoughts- Increased acceptance, peacefulness and openness to the self and others
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MoAs: Mechanisms of Action; PERMA model: Positive emotions, Engagement, Relationships, Meaning, and Achievements; MBSR: Mindfulness-Based Stress Reduction.

What role does individual motivation play in interventions to improve well-being among PCP?

In order to determine what role individual motivation plays in the interventions we reviewed, the qualitative data analysis software, Atlas.ti v23, was used to perform a text search and to encode mentions that included the following terms (and their inflections): ‘motivation’, ‘engagement’, ‘commitment’, ‘empowerment’, ‘involvement’, ‘intention’, ‘agency’, and ‘participation’. Having first eliminated mentions that appeared in the references section of the papers, a thematic analysis of the 105 citations selected was carried out. As shown in Table 5, four categories were established regarding the treatment of motivation in the interventions.

Table 5 Role of motivation in the interventions reviewed

Category	Role
Intention and motives for taking part in the intervention	<ul style="list-style-type: none">- This refers to the intentions or motives behind people’s decisions to participate in interventions, which may have differential effects on treatment results (e.g., “Well-being enhancement motive” or “Distress reduction motive”⁵⁰. None of the interventions were found to specifically assess the intentions of the participants. Intention is mentioned only once³² (“why one is practicing”), in reference to the work of Shapiro et al on the mechanisms of action of mindfulness⁵¹.
Adherence to treatment	<ul style="list-style-type: none">- Although most of the interventions involve self-selected participants, many of the authors point out that motivation and commitment is required to follow the treatment and carry out the activities required in the programs. Adherence to treatment is an obstacle to completing the intervention.- Three citations refer to the <i>institutional commitment</i> to wellness programs for PMC personnel.
Individual motivation as a result of the interventions	<ul style="list-style-type: none">- In this category, motivation is considered to be a component of eudaimonic well-being and is assessed as an indicator of the outcome of the intervention. Most of the mentions of engagement and empowerment belong to this category and refer mainly to work-related engagement.- In two cases, improvements in empathy and motivation of PMC personnel are mentioned: (i) for promoting patient participation in care, and (ii) listening to others and understanding the other’s experience.- Most mentions of intention refer to ‘turnover intention’ or ‘intention to leave [the organization]’ and are assessed as indicators of the outcome of the interventions.
Personal agency	<ul style="list-style-type: none">- Three quotes refer to personal agency as an element to take into account during the interventions, in relation to (i) the ability to influence the organizational

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environment (e.g., "...we speculate that improving job self-efficacy might have required a specific focus of coaching to help coachees identify and accept where they do and do not have agency in reconfiguring their jobs" ²⁰ ; (ii) "involvement in decision making and defining roles and expectations" ²³ or (ii) "agency and control over goal striving" ²⁰ .
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The results reveal a certain bias in how individual motivation is treated in the interventions. Mostly, the impact on work-related results is evaluated and, to a lesser extent, on other dimensions such as relationships with others or orientation towards patients. But there is also a need to investigate personal reasons for participating in the interventions, since different motivations may lead to differential results of the treatments applied⁵⁰.

DISCUSSION

Although in recent years there has been an upward trend in the number of studies that seek to improve and evaluate well-being among PCP, much remains to be investigated. Many of the interventions analyzed attempt to answer what Shapiro et al⁵¹ call the first-order question, "Are interventions effective?", but do not empirically answer the second-order question, "How do the interventions actually work?".

Some of the studies analyzed have important methodological limitations. First, the participants in these studies voluntarily decided to take part in them. This implies a selection bias as PCP who sign up to participate are likely to be more motivated to improve their well-being, while those who may need the intervention the most do not take part^{23, 27}. What also needs investigating is whether the treatments that are proposed to improve well-being meet the needs of potential participants. Secondly, the study samples are small and not representative, which may threaten their external validity. Thirdly, in some cases, the intervention did not include a control group. Finally, difficulties, in terms of completing the treatment and post-intervention follow-up with all the initial participants, were also evident in some of the studies.

It is the lack of well-being at work that is assessed in most studies, with distress and *degree of burnout* being used as indicators. Positive outcomes, such as those referring to level of *mindfulness*, *empowerment*, *commitment* and *resilience* are also assessed, but less frequently. This raises the question of which is more effective for evaluating well-being: the absence of negative outcomes or the presence of positive outcomes. Further studies are required to address this issue.

With regard to the mechanisms of action that are proposed to explain the results of interventions, many of the studies use multi-component programs without adequate controls that would allow researchers to determine which mechanisms of action are actually working. The clearest case of this relates to the methods used to apply the interventions, which mostly involve group work. In many studies, the participants share experiences and problems, discuss work issues, seek solutions together

and, ultimately, give each other support. However, variables such as socialization of beliefs, norms and values, as well as bonding and social support are not explicitly controlled and assessed as part of the intervention.

It was observed that some studies did not use validated scales in their entirety, probably due to their excessive length. New tools may be necessary to measure well-being, or lack of it, as well as briefer and easier-to-apply designs that improve levels of adherence to treatment. Most of the interventions focused on strategies aimed at reducing stress, and produced results that imply an improvement after the intervention. However, the sample sizes and selection criteria do not allow the results to be extrapolated.

More studies on the subject are needed to provide more precise definitions of the determinants of well-being at work; the interventions aimed at improving it and their mechanisms of action; the appropriate indicators and scales to measure them; and the motivations PMC workers have to participate.

LIMITATIONS

We have excluded studies carried out before 2000, because the literature on well-being at work in medicine is a more current research trend and, moreover, medical practice has changed substantially in the last two decades. Voluntary participation and self-reported measurements may cause bias, considering that different health systems and cultural differences among participants make comparisons difficult.

CONCLUSION

Despite the growing interest in improving well-being among PCP at work, the available clinical evidence on the interventions carried out does still do not allow us to provide an accurate assessment of their effectiveness. More research, and more controlled studies, are needed to determine the specific mechanisms of action of the different interventions, as well as the motivations of the participants.

OTHER INFORMATION

Funding/Support: The authors received no financial support for the research, authorship and/or publication of this article. The authors received financial support from the university for translation purposes.

Competing interest: The authors declare that they have no competing interests.

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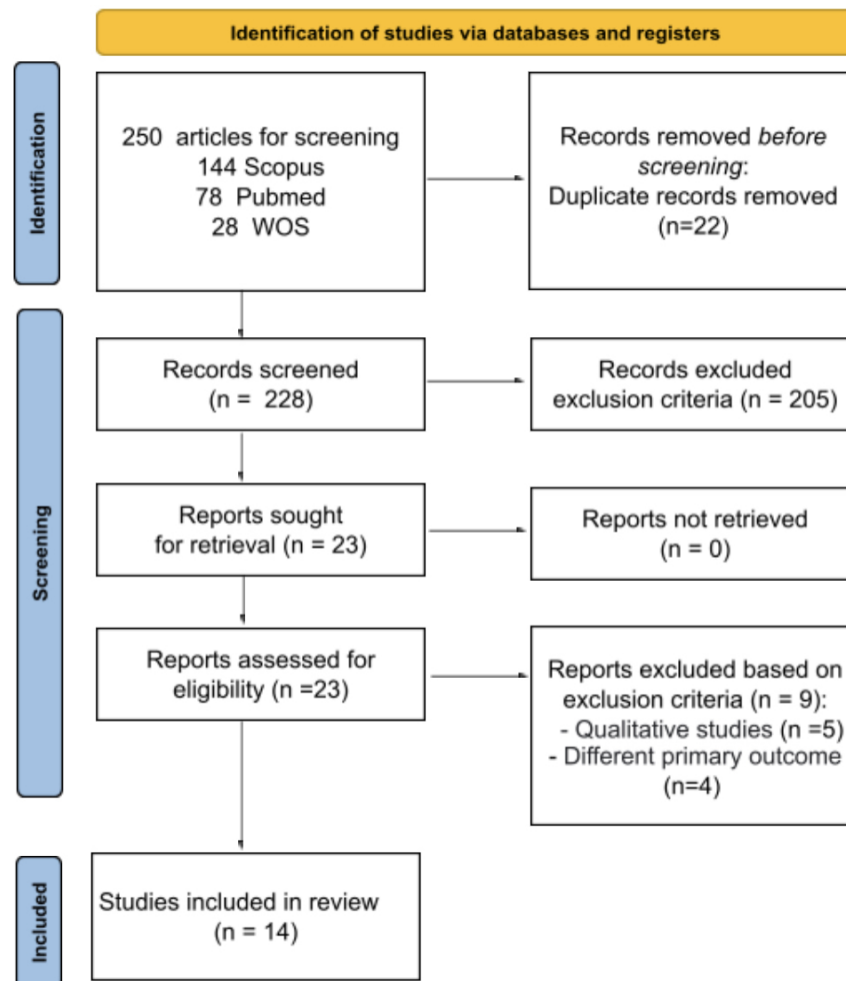
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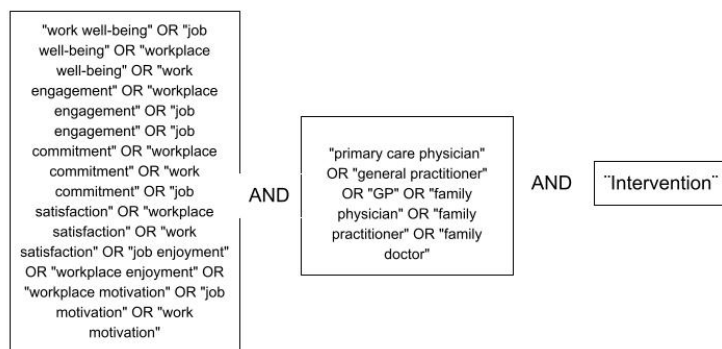
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132x144mm (216 x 216 DPI)



338x190mm (72 x 72 DPI)



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	5
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	5
Data items	10 a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	5
	10 b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	5

Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study/intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	8
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	8
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software packages used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting bias).	7
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	7



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	6
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	6

Study characteristics	17	Cite each included study and present its characteristics.	7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	7
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) a effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	7
Results of syntheses	20 a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	7
	20 b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20 c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20 d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23 a	Provide a general interpretation of the results in the context of other evidence.	14
	23 b	Discuss any limitations of the evidence included in the review.	15
	23 c	Discuss any limitations of the review processes used.	15
	23 d	Discuss implications of the results for practice, policy, and future research.	15
OTHER INFORMATION			
Registration and protocol	24 a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24 b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	

	24 c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	15
Competing interests	26	Declare any competing interests of review authors.	16
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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The motivational dimension in interventions to improve well-being at work among primary care physicians – A systematic review.

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075799.R1
Article Type:	Original research
Date Submitted by the Author:	31-Oct-2023
Complete List of Authors:	Florez, Adriana; Hospital de Palamós, SSIBE- ABS Palamos Villar-Hoz, Esperanza; Universitat de Girona, Psychology
Primary Subject Heading:	General practice / Family practice
Secondary Subject Heading:	Global health, Occupational and environmental medicine
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Title

The motivational dimension in interventions to improve well-being at work among primary care physicians– A systematic review.

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Keywords: Physicians, Primary Care, Psychological Well-Being, Psychosocial Intervention, Motivation.

Word count: 2887.

Abstract:

Objective: The well-being of primary care physicians (PCP) has become an object of concern for governments due to a staff shortages and high staff turnover. The objective of this study was to carry out a systematic review of individualized interventions aimed at improving the well-being of PCPs, which allowed us to determine (1) the type of interventions being carried out; (2) the well-being indicators being used, and the instruments used to assess them; (3) the theories proposed to support the interventions and the mechanisms of action (MoA) put forward to explain the results obtained; and (4) the role that individual motivation plays in the interventions to improve well-being among PCPs.

Design: Systematic review.

Eligibility criteria: Clinical trials on interventions aimed at improving the well-being of PCPs.

Information sources: a search of studies published between 2000 and 2022 was carried out in PubMed, SCOPUS, and Web of Science (WOS).

Results: From the search, 250 articles were retrieved. The two authors each reviewed the articles independently, duplicate articles and those that did not meet the inclusion criteria were discarded. A total of 14 studies that met the criteria were included: six randomized clinical trials, four controlled clinical trials, and four unique cohorts, with a before-and-after assessment of the intervention, involving a total of 655 individuals participating in the interventions. A meta-analysis was not possible due to the heterogeneity of the studies.

Conclusions: The information evaluated is insufficient to accurately assess the effectiveness of the interventions due to problems of design bias, sample size, and the lack of adequate controls for variables, such as socialization and support among colleagues. More studies need to be carried out on the subject to determine the effectiveness of the interventions, the mechanisms of action on the results, and the motivation of the participating PCPs.

Strengths and Limitation of this study

- The information about interventions for improving well-being among primary care physicians and the motivational mechanisms of action that support them seems scattered.
- Although we did not exclude articles in Spanish and French in the initial search, the ones remaining in the systematic review were all in English.
- The systematic review protocol wasn't registered in PROSPERO.
- The findings of this study depend on the available literature.

- After applying the exclusion criteria, only 14 studies were included for analysis.

INTRODUCTION:

Primary care physicians (PCP) play a key role within the health system. They are often the first point of contact with the patient; in many cases, they know them personally and are aware of their social and family environment. PCPs thus become a vital link in the chain of hospital treatment and social health care, providing patients with follow-up and support.[1]

However, in recent years it has become a challenge to cover all the PCPs posts required for an adequate patient/doctor ratio¹ and to reduce staff turnover. PCPs shortages are a considerable problem, with impacts on public health around the world. One reason put forward to explain the problem is the high percentage of primary care personnel at risk of burnout.[2] In a study carried out by the European General Practice Research Network (EGPRN) on PCPs throughout Europe, it was shown that 43% of professionals suffered emotional exhaustion due to work and that 12% obtained high scores in the three components of burnout (emotional exhaustion; depersonalization; and personal accomplishment).[3]

Various studies have been carried out to assess whether these elevated levels of burnout among PCPs influences the medical care offered to the patient.[4] A systematic review carried out in 2019, found that exhaustion among healthcare professionals increases the possibility of medical errors and that this can affect patient safety.[5] It was also shown that burnout impinges on the workers' quality of life, leading to increases in absenteeism from exhaustion, and more staff leaving the healthcare profession. This poses considerable difficulties for patient care – the central pillar of primary care. An earlier systematic review on burnout in PCPs, carried out in 2018, recommended broadening approaches aimed at improving health systems so as to include, as an objective, improving the lives of health professionals and their experience at work.[6] This approach coincides with a paradigm shift in occupational health studies, which has led to focussing attention not only on the prevention of burnout and the risks derived from work, but also on fostering the health and well-being of workers. Expanding the focus of occupational health towards a perspective centred on the well-being of the worker has been influenced by, among others, United Nations recognition of health and wellbeing as a sustainable development goal; The World Health Organization's model for action[7]; the policy guidelines published by the UK's National Institute for Health and Care Excellence aimed at improving workers' health and well-being[8]; and the promotion of healthy organizations based on the contributions of positive psychology[9]. With this new approach, improving the health and well-being of workers constitutes an end in itself; it is not subordinated solely to the productive demands of the organization, but oriented towards a relationship of "mutual gains" for all stakeholders.[10]

In this context, it no longer makes sense to make a distinction between person-centred interventions and contextualized interventions acting on organizational and environmental determining factors: the two strategies – aimed at improving well-being – are complementary. Individual interventions are still

necessary to foster motivation and facilitate measures that are committed to the goals of personal, organizational and social well-being.

Individual well-being is defined “as an integrative concept that characterizes quality of life with respect to an individual’s health and work-related environmental, organizational, and psychosocial factors. Well-being is the experience of positive perceptions and the presence of constructive conditions at work, and beyond, that enables workers to thrive and achieve their full potential”.[11] This definition includes the two theoretical traditions that have dealt with the study of well-being: Hedonic Well-Being (HWB) and Eudaimonic Well-Being (EWB).[12] Hedonic well-being is usually linked to the concept of Subjective Well-Being (SWB), and includes the components of pleasant affect, unpleasant affect and life satisfaction.[13] On the other hand, from a eudaimonic perspective, well-being is considered as the individual ideal that provides purpose and direction to one’s life, through personal growth and self-realization.[14]

Although notable progress has been made in recent years both in research and in the definition and operationalization of occupational well-being as a construct,[11] less attention has been devoted to the role of motivation and individual agency in research on interventions aimed at improving it. The objective of this study is to carry out a systematic review to evaluate the current research available on individualized interventions aimed at improving the well-being of PCPs based on the following questions: (1) What type of interventions are being carried out to improve the well-being of PCPs? (2) Which well-being indicators are used to assess outcomes, and which instruments are used to assess them? (3) What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained? And (4) what role does individual motivation play in interventions to improve well-being among PCPs?

METHODS

Data sources, search strategy and study selection

A systematic review protocol was designed in line with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[15] We consulted a specialist librarian in thematic documentation in Psychology from [omitted for blind peer review] in order to define the search descriptors. The search was carried out in the Pubmed, Scopus and WOS databases, in October 2022.

Terms were selected following the PICO strategy (Population, Intervention, Comparison, Outcome). Population was defined as currently active, primary care physician , for which the Medical Subject Headings (MeSH) terms used were: “primary care physician” OR “general practitioner” OR “GP” OR “family physician” OR “family practitioner” OR “family doctor”. The MeSH term: “intervention” was used for the search. The main outcomes indicators referred to motivation and well-

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being at work, for which various MeSH terms appearing in titles, abstracts or keywords were used: “job well-being” OR “work engagement” OR “workplace commitment” OR “job satisfaction” OR “workplace enjoyment” OR “workplace motivation” and other synonyms. The search strategy is shown in supplemental Figure 1.

The search was carried out using MeSH terms, afterwards, a manual search was carried out, and we also reviewed the references of similar systematic reviews for further relevant references. It was limited to quantitative experimental and quasi-experimental articles published between 2000 and 2022, available in Spanish, English and French. Only articles in which the target population were PCPs were included and, of those where other members of the primary care team participated, only the data corresponding to PCPs were taken into account. Articles where interventions were carried out to improve the well-being of doctors in training were discarded. Also excluded were articles in which the intervention was carried out at the organizational level or in the health system, or those in which the primary outcome was not PCPs well-being. Supplemental Figure 2 shows the process of identification, screening and selection of the articles.

All the articles were read in detail and the information extracted was recorded in a summary table. Each author of this review first read the texts independently, and then the information was pooled. 250 articles were found that met the criteria of publication date and language, and these were manually reviewed to exclude duplicates, leaving 228 abstracts. A further 205 were discarded because, on closer inspection, they did not meet the inclusion criteria. The full texts of the 23 selected articles were retrieved and then read in depth, and nine of these were discarded for not meeting the inclusion criteria. For example, studies such as the one by Rees et al [16] were not included because they involved mixed designs in which the qualitative component was used to evaluate the outcome; in total there were five articles discarded for this reason. Four other articles were discarded because they focussed on a different primary outcome, for example the objective of Dunn et al [17] was to improve the well-being of the organization and the quality of patient care.

Data extraction and risk of bias

The search was carried out independently by each author, AF and EV, using the MeSH terms and by manual search. Subsequently, and again independently, we used the Effective Public Health Practice Project (EPHPP)[18] to assess the quality of the selected studies; the discrepancies in the items were discussed and agreed upon. We chose the EPHPP tool as a quality assessment measure because it is designed to comprehend a wider range of study designs and takes into account the validity and reliability of data collection methods, which fits with our object of study. Table 1 shows a summarised version of the evaluation of the quality of the studies using the EPHPP. Full version can be seen in the Supplemental Table 1.

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Table 1 Quality analysis based on the tool EPHPP - Short version.

	Author (year of publication)	TOTAL
1	West et al (2014) [19]	M
2	McGonagle et al (2020) [20]	W
3	West et al (2021) [21]	M
4	Asuero et al (2014) [22]	M
5	Cheng et al (2015) [23]	S
6	Schroeder et al (2016) [24]	M
7	Gardiner et al (2004) [25]	M
8	Gardiner et al (2013) [26]	W
9	Holt et al (2006) [27]	M
10	Amutio et al (2015) [28]	M
11	Fortney et al (2013) [29]	W
12	Krasner et al (2009) [30]	W
13	Montero-Marín et al (2017) [31]	W
14	Wietmarschen et al (2018) [32]	W

S: strong; M: Moderate; W: Weak;.

The EPHPP scale was applied to assess the quality of the studies in the articles. 42% of them were classified as weak in the general classification; however, as can be seen in Supplemental Table 1, this is largely due to the fact that most of the studies (85%) were classified as weak in category A, which assesses bias in the selection of the participants because most of them were self-selected access.

Of the 14 studies, 71% had a strong study design – either random clinical trials (RCT) or clinical control trials (CCT) – while the remaining 29% were single cohort studies (CBA: control before and after). All of the studies scored strongly in Category E, data collection methods, while 58% of them scored weakly in Category D, blinding. The number of participants varied highly in the studies, ranging from 9 to 120 participants.

After evaluating the quality of the studies, a thematic analysis was carried out to evaluate the role of motivation in the interventions. The atlas.ti V23 software was used to perform a text search and to encode mentions that included the following terms (and their inflections): 'motivation', 'engagement', 'commitment', 'empowerment', 'involvement', 'intention', 'agency', and 'participation'. The findings, categories, and the synthesized findings were recorded in a table.

Patient and public involvement

This research was done without patient or public involvement.

FINDINGS

What type of interventions are being carried out to improve the well-being of PCPs?

Taking as a reference the design strategy of each intervention and its objective, the studies were classified according to the type of interventions carried out. Mindfulness was used in 50% of the studies, while the other 50% used various strategies such as coaching, discussion groups, gratitude journals, and cognitive-behavioural training. Table 2 shows the interventions used in the studies, along with the authors, the date of the study, the study design and the sample size.

Table 2 Type of intervention and study design.

	Study ID	Design	N°	Intervention
1	Amutio et al (2015) [28]	RCT	21	Mindfulness
2	Schroeder et al (2016) [24]	RCT	15	Mindfulness
3	Asuero et al (2014) [22]	CCT	43	Mindfulness
4	Fortney et al (2013) [29]	CBA	30	Mindfulness
5	Krasner et al (2009) [30]	CBA	70	Mindfulness
6	Montero-Marin et al (2017) [31]	CBA	58	Mindfulness
7	Wietmarschen et al (2018) [32]	CBA	54	Mindfulness
8	Cheng et al (2015) [23]	RCT	34	Gratitude diary
9	West et al (2014) [19]	RCT	37	Discussion groups
10	McGonagle et al (2020) [20]	RCT	29	Coaching

11	West et al (2021) [21]	RCT	64	Discussion groups
12	Gardiner et al (2004) [25]	CCT	85	Cognitive Behavioural training
13	Gardiner et al (2013) [26]	CCT	69	Cognitive Behavioural coaching
14	Holt et al (2006) [27]	CCT	106	E-mail feedback about individual distress levels and a self-help sheet

RCT: random clinical trial; CCT: control clinical trial; CBA: control before and after; N°: number PCP participants in group intervention.

Although half of the articles employ mindfulness programs in their intervention strategy, it should be noted that, in most cases, a multi-component program is employed which includes various other elements such as psychoeducation, discussion groups, narrative and appreciative inquiry exercises on communication skills. This makes it difficult to determine the impact of each of the different elements of the program on the results.

Which well-being indicators are used to assess outcomes, and which instruments are used to assess them?

The main well-being indicators used in the articles to assess the outcomes of the interventions were identified, and the instruments used to assess them were recorded. These indicators may measure positive aspects (e.g. resilience) or negative aspects (e.g., burnout). Only indicators assessed in at least two studies were recorded in the summary table. Table 3 indicates how commonly these indicators were used in the selected articles, and the instruments used to assess them.

Table 3 Well-being indicators, the number of studies that used them, and the instruments used to assess them.

	Well-being indicators	N° of Studies	Instruments used to assess indicators
1	Mindfulness	5	FFMQ, MAAS
2	Job Satisfaction	3	PWS
3	Meaning at Work	2	EWS
4	Resilience	3	BRS
5	Compassion	6	SCB SC, JSEP (compassion subscale)
6	Empowerment	3	EWS

7	Engagement	2	JES
8	Empathy	3	JSPE
9	Self Reflection	2	Diaries
10	Psychological Capital	2	PCS
11	Burnout	9	MBI, BCSQ
12	Distress	10	PSS, SIG, GHQ-12, PANAS
13	Depression	7	PRIME-M, PCS, POMS, GHQ-12
14	Mood disturbance	2	POMS

Positive and negative well-being indicators have been marked with a different colour. *N° of studies* refers to the number of studies that assessed the indicator (only those assessed in more than two studies were recorded in the table); *FFMQ*: Five Facet Mindfulness Questionnaire [33]; *MAAS*: Mindful Attention Awareness Scale [34]; *PWS*: Physician Worklife Survey [35]; *EWS*: Empowerment at Work Scale [36]; *BRS*: Brief Resilience Scale [37]; *SCBCS*: Santa Clara Brief Compassion Scale [38]; *JES*: Job Engagement Scale [39]; *JSEP*: Jefferson Scale of Physician Empathy [40]; *MBI*: Maslach Burnout Inventory [41]; *BCSQ*: Burnout Clinical Subtypes Questionnaire [42]; *PSS*: Perceived Stress Scale [43]; *SIG*: Stress In General scale [44]; *GHQ-12*: General Health Questionnaire 12 [45]; *PANAS*: positive and negative affect [46]; *PRIME-M*: Primary Care Evaluation of Mental Disorders [46]; *PCS*: Psychological Capital Questionnaire [47]; *POMS*: Profile Of Mood States [48].

Sixteen indicators that were used to assess well-being among PCPs were identified. Two of these, *social support* and *fatigue*, are not listed in Table 3 since they were only assessed in a single study but were included in the analysis. Distress and burnout, as indicators of lack of well-being, were used by nearly all of the studies: 71% evaluated distress and 64% burnout, whereas only one of the studies did not evaluate either aspect. The Maslach Burnout Inventory [41] was applied in 57% of the studies evaluated, and the Perceived Stress Scale⁴³ in 35%.

Some of the indicators used in the studies referred to positive health aspects were: mindfulness, job satisfaction, meaning at work, resilience, compassion, empowerment, engagement, empathy, self reflection and psychological capital. A number of different scales were employed to measure these parameters before and after the intervention. Moreover, 21% of the studies used their own scales to evaluate the interventions.

What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained?

Table 4 lists the theoretical foundations supporting the interventions carried out in the studies in this review. Mindfulness programs are based mostly on the program designed by Kabat-Zinn (Mindfulness-Based Stress Reduction, MBSR).^[49] Regarding the rest, all the proposed interventions take a cognitive-behavioural approach. Although most of the works include some specific theoretical background, the focus of the interventions is mainly pragmatic, and is not aimed at verification or theoretical

construction.

Table 4 Theoretical models and mechanisms of action proposed for the reviewed interventions.

	Author(s) (publication year)	Theoretical background	Proposed MoAs
1	West et al (2014) [19]	Not specified (previous literature)	<ul style="list-style-type: none">- Self-awareness- Self-reflection- Meaning- Values clarification- Personal resources- Small group discussion and reflection- Community building- Enhanced sense of connectedness
2	McGonagle et al (2020) [20]	Positive psychology – PERMA model (Seligman & Csikszentmihalyi, 2000; Seligman, 2012)	<ul style="list-style-type: none">- Building personal resources and resilience- Reframing- Setting client-centred goals- Setting client-centred action plans- Using strengths in new ways- Mindfulness reflections- Gratitude reflections- Promoting feelings of empowerment and self-efficacy- Job crafting- Positive emotions- Engagement- Positive relationships- Meaning- Achievements
3	West et al (2021) [21]	Not specified (previous literature)	<ul style="list-style-type: none">- Meaning- Community building- Social connection- Topics discussion
4	Martin-Asuero et al (2014) [22]	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	<ul style="list-style-type: none">- Enhanced self-awareness- Psychological flexibility- Emotional self-regulation
5	Cheng et al (2015)[23]	Transactional model of stress and coping (Lazarus & Folkman, 1984)	<ul style="list-style-type: none">- Positive thinking- Active coping- Seeking social support- Decreased negative emotions- Reduction of materialistic pursuits- Enhanced accessibility to positive memories

			<ul style="list-style-type: none"> - Improved relationships - Enhanced spiritual well-being
6	Schroeder et al (2016) [24]	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008; Fortney et al., 2013)	<ul style="list-style-type: none"> - Intentional regulation of attention and awareness of the present moment - Nonjudgmental and curious willingness to experience contents of the present moment - Compassion skills - Communication skills (SLO)
7	Gardiner et al (2004) [25]	Cognitive Behavioural Theory Stress and Coping	<ul style="list-style-type: none"> - Training of specific coping styles (improved logical analysis and problem solving; decreased emotional discharge)
8	Gardiner et al (2013) [26]	Cognitive Behavioural Coaching	<ul style="list-style-type: none"> - Self-management skills - Attitudinal changes - Psychological hardiness - Decreased perceived loneliness feelings
9	Holt et al (2006) [27]	Transtheoretical Theory of Change (Prochaska & DiClemente, 1984)	<ul style="list-style-type: none"> - Feedback on distress assessment results - Consciousness raising about one's own health and emotional arousal
10	Amutio et al (2015) [28]	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	<ul style="list-style-type: none"> - Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills
11	Fortney et al (2013) [29]	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008)	<ul style="list-style-type: none"> - Being more present - Mindful attitudes - Communication skills - Compassion for self and others
12	Krasner et al (2009) [30]	Theory of mindful practice (Epstein, 1999)	<ul style="list-style-type: none"> - Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills
13	Montero-Marín et al (2017) [31]	(Modified version of MBSR) (Kabat-Zinn, 1982; Kabat-Zinn et al., 1985)	<ul style="list-style-type: none"> - Non-judgemental awareness of moment-to-moment experience - Attention to one's current actions - Emotional self-regulation - Acquisition of personal resources

14	Wietmarschen et al (2018) [32]	(Modified version of MBSR) (Kabat-Zinn, 1990)	<ul style="list-style-type: none">- Attention- Self-regulation- Values clarification- Psychological flexibility- Increased awareness of one’s own feelings and thoughts- Increased acceptance, peacefulness and openness to the self and others
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MoAs: Mechanisms of Action; PERMA model: Positive emotions, Engagement, Relationships, Meaning, and Achievements; MBSR: Mindfulness-Based Stress Reduction.

What role does individual motivation play in interventions to improve well-being among PCPs?

Having first eliminated mentions that appeared in the references section of the papers, a thematic analysis of the 105 citations selected was carried out. The findings were classified into four defined categories with the objective of evaluating the role of motivation in the interventions applied. As shown in Table 5.

Table 5 Role of motivation in the interventions reviewed

Category	Role
Intention and motives for taking part in the intervention	<ul style="list-style-type: none">- This refers to the intentions or motives behind people’s decisions to participate in interventions, which may have differential effects on treatment results (e.g., “Well-being enhancement motive” or “Distress reduction motive” [50]. None of the interventions were found to specifically assess the intentions of the participants. Intention is mentioned only once [32] (“why one is practicing”), in reference to the work of Shapiro et al on the mechanisms of action of mindfulness [51].
Adherence to treatment	<ul style="list-style-type: none">- Although most of the interventions involve self-selected participants, many of the authors point out that motivation and commitment is required to follow the treatment and carry out the activities required in the programs. Adherence to treatment is an obstacle to completing the intervention.- Three citations refer to the <i>institutional commitment</i> to wellness programs for PMC personnel.
Individual motivation as a result of the interventions	<ul style="list-style-type: none">- In this category, motivation is considered to be a component of eudaimonic well-being and is assessed as an indicator of the outcome of the intervention. Most of the mentions of engagement and empowerment belong to this category and refer mainly to work-related engagement.- In two cases, improvements in empathy and motivation of PMC personnel are mentioned: (i) for promoting patient participation in care, and (ii) listening to others and understanding the other’s experience.- Most mentions of intention refer to ‘turnover intention’ or ‘intention to leave [the organization]’ and are assessed as indicators of the outcome of the interventions.
Personal agency	<ul style="list-style-type: none">- Three quotes refer to personal agency as an element to take into account during the interventions, in relation to (i) the ability to influence the organizational environment (e.g., “...we speculate that improving job self-efficacy might have required a specific focus of coaching to help coachees identify and accept where

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	they do and do not have agency in reconfiguring their jobs" [20]; (ii) "involvement in decision making and defining roles and expectations"[23] or (ii) "agency and control over goal striving" [20].
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The results reveal a certain bias in how individual motivation is treated in the interventions. Mostly, the impact on work-related results is evaluated and, to a lesser extent, on other dimensions such as relationships with others or orientation towards patients. But there is also a need to investigate personal reasons for participating in the interventions, since different motivations may lead to differential results of the treatments applied [50].

DISCUSSION

Although in recent years there has been an upward trend in the number of studies that seek to improve and evaluate well-being among PCPs, much remains to be investigated. Many of the interventions analyzed attempt to answer what Shapiro et al⁵¹ call the first-order question, "Are interventions effective?", but do not empirically answer the second-order question, "How do the interventions actually work?".

Some of the studies analyzed have important methodological limitations. First, the participants in these studies voluntarily decided to take part in them. This implies a selection bias as PCPs who sign up to participate are likely to be more motivated to improve their well-being, while those who may need the intervention the most do not take part [23,27]. What also needs investigating is whether the treatments that are proposed to improve well-being meet the needs of potential participants. Secondly, the study samples are small and not representative, which may threaten their external validity. Thirdly, in some cases, the intervention did not include a control group. Finally, difficulties, in terms of completing the treatment and post-intervention follow-up with all the initial participants, were also evident in some of the studies.

It is the lack of well-being at work that is assessed in most studies, with distress and *degree of burnout* being used as indicators. Positive outcomes, such as those referring to level of *mindfulness*, *empowerment*, *commitment* and *resilience* are also assessed, but less frequently. This raises the question of which is more effective for evaluating well-being: the absence of negative outcomes or the presence of positive outcomes. Further studies are required to address this issue.

With regard to the mechanisms of action that are proposed to explain the results of interventions, many of the studies use multi-component programs without adequate controls that would allow researchers to determine which mechanisms of action are actually working. The clearest case of this relates to the methods used to apply the interventions, which mostly involve group work. In many studies, the participants share experiences and problems, discuss work issues, seek solutions together and, ultimately, give each other support. However, variables such as socialization of beliefs, norms and

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values, as well as bonding and social support are not explicitly controlled and assessed as part of the intervention.

It was observed that some studies did not use validated scales in their entirety, probably due to their excessive length. New tools may be necessary to measure well-being, or lack of it, as well as briefer and easier-to-apply designs that improve levels of adherence to treatment. Most of the interventions focused on strategies aimed at reducing stress, and produced results that imply an improvement after the intervention. However, the sample sizes and selection criteria do not allow the results to be extrapolated.

More studies on the subject are needed to provide more precise definitions of the determinants of well-being at work; the interventions aimed at improving it and their mechanisms of action; the appropriate indicators and scales to measure them; and the motivations PMC workers have to participate.

LIMITATIONS

We have excluded studies carried out before 2000, because the literature on well-being at work in medicine is a more current research trend and, moreover, medical practice has changed substantially in the last two decades. Voluntary participation and self-reported measurements may cause bias, considering that different health systems and cultural differences among participants make comparisons difficult.

CONCLUSION

Despite the growing interest in improving well-being among PCPs at work, the available clinical evidence on the interventions carried out does still do not allow us to provide an accurate assessment of their effectiveness. More research, and more controlled studies, are needed to determine the specific mechanisms of action of the different interventions, as well as the motivations of the participants.

OTHER INFORMATION

Contributorship statement: AF and EV conceptualised and designed the review. AF and EV reviewed titles, abstracts and full-text papers for eligibility. Authors resolved disagreement by discussion. AF was responsible for extracting data and all data extraction was verified by EV. AF and EV independently assessed the methodological quality of each study. AF and EV prepared the manuscript. AF y EV reviewed and edited the manuscript.

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Competing interest: The authors declare that they have no competing interests.

Funding/Support: The authors received no financial support for the research, authorship and/or publication of this article. The authors received financial support from the university for translation purposes.

Data Sharing statement: Data sharing not applicable as no datasets generated and/or analysed for this study. All data relevant to the study are included in the article or uploaded as online supplemental information. All data underlying the results are available as part of the article and no additional source data are required.

Ethic Statements:

Patient consent for publication: not required.

Ethics approval: no ethical approval was needed because we used data from previous published studies.

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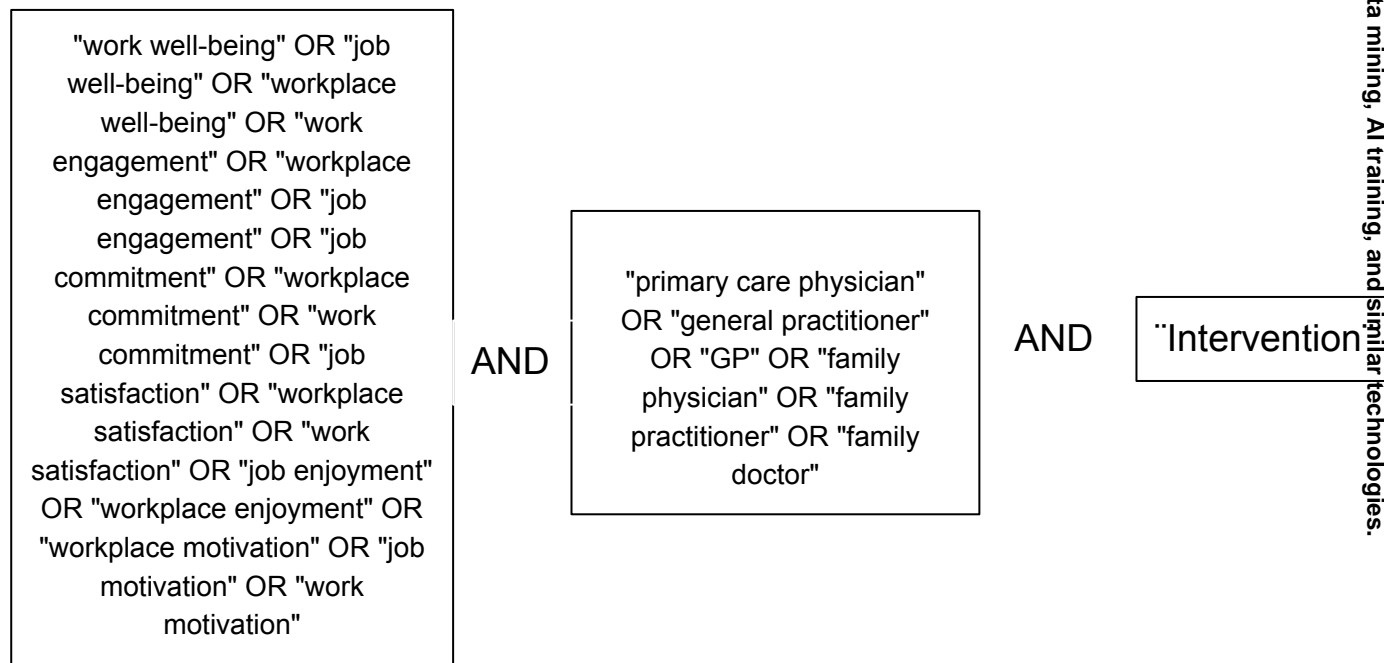
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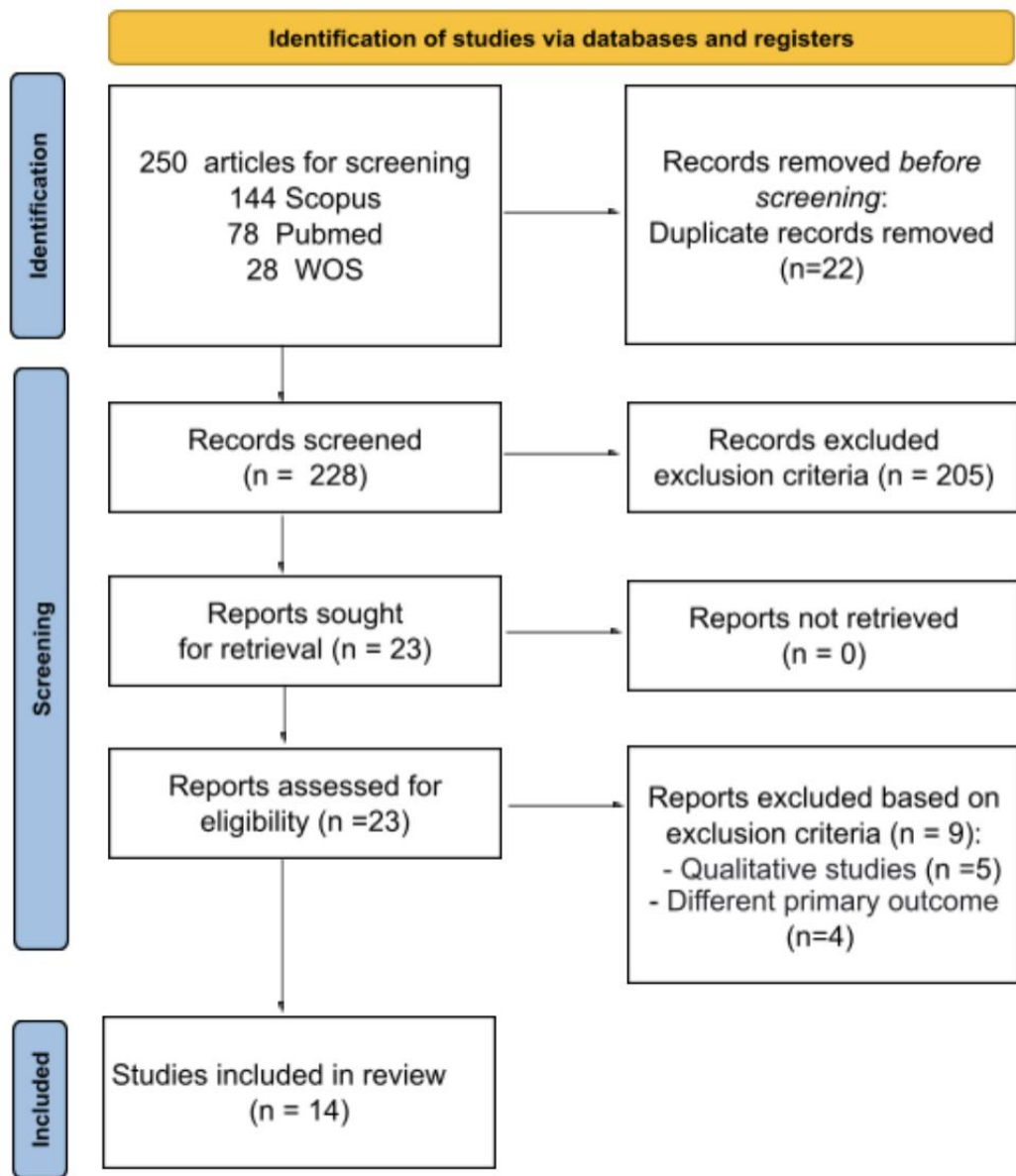
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Supplemental Figure 2 Flow diagram of article selection process (PRISMA guidelines 2020)[15]

Supplemental Table 1. Quality analysis based on the tool EPHPP.¹⁸

		A	B		C	D	E	F	TOTAL
	Author (year of publication)	R	DESIGN	R	R	R	R	R	
1	West et al (2014) ¹⁹	W	RCT	S	S	M	S	S	M
2	McGonagle et al (2020) ²⁰	W	RCT	S	S	W	S	M	W
3	West et al (2021) ²¹	W	RCT	S	S	M	S	S	M
4	Asuero et al (2014) ²²	W	CCT	S	S	M	S	S	M
5	Cheng et al (2015) ²³	M	RCT	S	S	S	S	S	S
6	Schroeder et al (2016) ²⁴	W	RCT	S	S	M	S	M	M
7	Gardiner et al (2004) ²⁵	W	CCT	S	S	W	S	M	M
8	Gardiner et al (2013) ²⁶	W	CCT	S	S	W	S	W	W
9	Holt et al (2006) ²⁷	M	CCT	S	S	W	S	M	M
10	Amutio et al (2015) ²⁸	W	RCT	S	S	M	S	S	M
11	Fortney et al (2013) ²⁹	W	CBA	M	S	W	S	M	W
12	Krasner et al (2009) ³⁰	W	CBA	M	W	W	S	M	W
13	Montero-Marín et al (2017) ³¹	W	CBA	M	W	W	S	W	W
14	Wietmarschen et al (2018) ³²	W	CBA	M	W	W	S	W	W

A: Selection bias; B: Study design; C: Confounders; D: Blinding; E: Data collection method; F: Withdrawals and dropouts; R: Rating; S: strong; M: Moderate; W: Weak; RCT: Random clinical trial; CCT: Control clinical trial; CBA: Control before and after.



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	5
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	5
Data items	10 a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	5
	10 b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	5

Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	NA
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study/intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	8
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	8
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software packages used.	6
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting bias).	7
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	7



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	6
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	6

Study characteristics	17	Cite each included study and present its characteristics.	7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	7
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) a effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	7
Results of syntheses	20 a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	7
	20 b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20 c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20 d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23 a	Provide a general interpretation of the results in the context of other evidence.	14
	23 b	Discuss any limitations of the evidence included in the review.	15
	23 c	Discuss any limitations of the review processes used.	15
	23 d	Discuss implications of the results for practice, policy, and future research.	15
OTHER INFORMATION			
Registration and protocol	24 a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	NA
	24 b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	NA

	24 c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	15
Competing interests	26	Declare any competing interests of review authors.	16
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	NA

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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BMJ Open

The motivational dimension in interventions to improve well-being at work among primary care physicians – A systematic review.

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075799.R2
Article Type:	Original research
Date Submitted by the Author:	17-Jan-2024
Complete List of Authors:	Florez, Adriana; Hospital de Palamós, SSIBE- ABS Palamos Villar-Hoz, Esperanza; Universitat de Girona, Psychology
Primary Subject Heading:	General practice / Family practice
Secondary Subject Heading:	Global health, Occupational and environmental medicine
Keywords:	Occupational Stress, Primary Health Care, Physicians, Systematic Review

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Title

The motivational dimension in interventions to improve well-being at work among primary care physicians– A systematic review.

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Keywords: Physicians, Primary Care, Psychological Well-Being, Psychosocial Intervention,
Motivation.

Word count: 3186.

Abstract:

Objective: The well-being of primary care physicians (PCP) has become an object of concern for governments due to a staff shortages and high staff turnover. The objective of this study was to carry out a systematic review of individualized interventions aimed at improving the well-being of PCPs, which allowed us to determine (1) the type of interventions being carried out; (2) the well-being indicators being used, and the instruments used to assess them; (3) the theories proposed to support the interventions and the mechanisms of action (MoA) put forward to explain the results obtained; and (4) the role that individual motivation plays in the interventions to improve well-being among PCPs.

Design: Systematic review.

Eligibility criteria: Clinical trials on interventions aimed at improving the well-being of PCPs.

Information sources: a search of studies published between 2000 and 2022 was carried out in PubMed, SCOPUS, and Web of Science (WOS).

Results: From the search, 250 articles were retrieved. The two authors each reviewed the articles independently, duplicate articles and those that did not meet the inclusion criteria were discarded. A total of 14 studies that met the criteria were included: six randomized clinical trials, four controlled clinical trials, and four unique cohorts, with a before-and-after assessment of the intervention, involving a total of 655 individuals participating in the interventions. A meta-analysis was not possible due to the heterogeneity of the studies.

Conclusions: The information evaluated is insufficient to accurately assess the effectiveness of the interventions due to problems of design bias, sample size, and the lack of adequate controls for variables, such as socialization and support among colleagues. More studies need to be carried out on the subject to determine the effectiveness of the interventions, the mechanisms of action on the results, and the motivation of the participating PCPs.

Strengths and Limitation of this study

- The information about interventions for improving well-being among primary care physicians and the motivational mechanisms of action that support them seems scattered.
- Most of the studies reviewed had a strong design, however the samples were small, which diminishes the external validity of the results.

- The study examines the role of individual motivation and agency in intervention to improve PCPs occupational well-being.
- The existence of multiple motivational constructs was a limitation to a comprehensive search strategy.
- The systematic review protocol wasn't registered in PROSPERO.

INTRODUCTION:

Primary care physicians (PCP) play a key role within the health system. They are often the first point of contact with the patient; in many cases, they know them personally and are aware of their social and family environment. PCPs thus become a vital link in the chain of hospital treatment and social health care, providing patients with follow-up and support.[1]

However, in recent years it has become a challenge to cover all the PCPs posts required for an adequate patient/doctor ratio₁ and to reduce staff turnover. PCPs shortages are a considerable problem, with impacts on public health around the world. One reason put forward to explain the problem is the high percentage of primary care personnel at risk of burnout.[2] In a study carried out by the European General Practice Research Network (EGPRN) on PCPs throughout Europe, it was shown that 43% of professionals suffered emotional exhaustion due to work and that 12% obtained high scores in the three components of burnout (emotional exhaustion; depersonalization; and personal accomplishment).[3]

Various studies have been carried out to assess whether these elevated levels of burnout among PCPs influences the medical care offered to the patient.[4] A systematic review carried out in 2019, found that exhaustion among healthcare professionals increases the possibility of medical errors and that this can affect patient safety.[5] It was also shown that burnout impinges on the workers' quality of life, leading to increases in absenteeism from exhaustion, and more staff leaving the healthcare profession. This poses considerable difficulties for patient care – the central pillar of primary care. An earlier systematic review on burnout in PCPs, carried out in 2018, recommended broadening approaches aimed at improving health systems so as to include, as an objective, improving the lives of health professionals and their experience at work.[6] This approach coincides with a paradigm shift in occupational health studies, which has led to focussing attention not only on the prevention of burnout and the risks derived from work, but also on fostering the health and well-being of workers. Expanding the focus of occupational health towards a perspective centred on the well-being of the worker has been influenced by, among others, United Nations recognition of health and wellbeing as a sustainable development goal; The World Health Organization's model for action[7]; the policy guidelines published by the UK's National Institute for Health and Care Excellence aimed at improving workers' health and well-being[8]; and the promotion of healthy organizations based on the contributions of positive psychology[9]. With this new approach, improving the health and well-being of workers

constitutes an end in itself; it is not subordinated solely to the productive demands of the organization, but oriented towards a relationship of “mutual gains” for all stakeholders.[10]

In this context, it no longer makes sense to make a distinction between person-centred interventions and contextualized interventions acting on organizational and environmental determining factors: the two strategies – aimed at improving well-being – are complementary. Individual interventions are still necessary to foster motivation and facilitate measures that are committed to the goals of personal, organizational and social well-being.

Individual well-being is defined “as an integrative concept that characterizes quality of life with respect to an individual’s health and work-related environmental, organizational, and psychosocial factors. Well-being is the experience of positive perceptions and the presence of constructive conditions at work, and beyond, that enables workers to thrive and achieve their full potential”.[11] This definition includes the two theoretical traditions that have dealt with the study of well-being: Hedonic Well-Being (HWB) and Eudaimonic Well-Being (EWB).[12] Hedonic well-being is usually linked to the concept of Subjective Well-Being (SWB), and includes the components of pleasant affect, unpleasant affect and life satisfaction.[13] On the other hand, from a eudaimonic perspective, well-being is considered as the individual ideal that provides purpose and direction to one’s life, through personal growth and self-realization.[14]

Although notable progress has been made in recent years both in research and in the definition and operationalization of occupational well-being as a construct,[11] less attention has been devoted to the role of motivation and individual agency in research on interventions aimed at improving it. The objective of this study is to carry out a systematic review to evaluate the current research available on individualized interventions aimed at improving the well-being of PCPs based on the following questions: (1) What type of interventions are being carried out to improve the well-being of PCPs? (2) Which well-being indicators are used to assess outcomes, and which instruments are used to assess them? (3) What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained? And (4) what role does individual motivation play in interventions to improve well-being among PCPs?

METHODS

Data sources, search strategy and study selection

A systematic review protocol was designed in line with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[15] We consulted a specialist librarian in thematic documentation in Psychology from [omitted for blind peer review] in order to define the search descriptors. The search was carried out in the Pubmed, Scopus and WOS databases, in October 2022.

Terms were selected following the PICO strategy (Population, Intervention, Comparison, Outcome). Population was defined as currently active, primary care physician, for which the Medical Subject Headings (MeSH) terms used were: “primary care physician” OR “general practitioner” OR “GP” OR “family physician” OR “family practitioner” OR “family doctor”. The MeSH term: “intervention” was used for the search. The main outcomes indicators referred to motivation and well-being at work, for which various MeSH terms appearing in titles, abstracts or keywords were used: “job well-being” OR “work engagement” OR “workplace commitment” OR “job satisfaction” OR “workplace enjoyment” OR “workplace motivation” and other synonyms. The search strategy is shown in supplemental Figure 1.

The search was carried out using MeSH terms; afterwards, a manual search was carried out, and we also reviewed the references of similar systematic reviews for further relevant references. It was limited to quantitative experimental and quasi-experimental articles published between 2000 and 2022, available in Spanish, English and French. Only articles in which the target population were PCPs were included and, of those where other members of the primary care team participated, only the data corresponding to PCPs were taken into account. Articles where interventions were carried out to improve the well-being of doctors in training were discarded. Also excluded were articles in which the intervention was carried out at the organizational level or in the health system, or those in which the primary outcome was not PCPs well-being. Supplemental Figure 2 shows the process of identification, screening and selection of the articles.

All the articles were read in detail and the information extracted was recorded in a summary table. Each author of this review first read the texts independently, and then the information was pooled. 250 articles were found that met the criteria of publication date and language, and these were manually reviewed to exclude duplicates, leaving 228 abstracts. A further 205 were discarded because, on closer inspection, they did not meet the inclusion criteria. The full texts of the 23 selected articles were retrieved and then read in depth, and nine of these were discarded for not meeting the inclusion criteria. For example, studies such as the one by Rees et al [16] were not included because they involved mixed designs in which the qualitative component was used to evaluate the outcome; in total there were five articles discarded for this reason. Four other articles were discarded because they focussed on a different primary outcome, for example the objective of Dunn et al [17] was to improve the well-being of the organization and the quality of patient care.

Data extraction and risk of bias

The search was carried out independently by each author, AF and EV, using the MeSH terms and by manual search. Subsequently, and again independently, we used the Effective Public Health Practice Project (EPHPP)[18] to assess the quality of the selected studies; the discrepancies in the items were discussed and agreed upon. We chose the EPHPP tool as a quality assessment measure because it is

designed to comprehend a wider range of study designs and takes into account the validity and reliability of data collection methods, which fits with our object of study. Table 1 shows a summarised version of the evaluation of the quality of the studies using the EPHPP. Full version can be seen in the Supplemental Table 1.

Table 1 Quality analysis based on the tool EPHPP - Short version.

	Author (year of publication)	TOTAL
1	West et al (2014) [19]	M
2	McGonagle et al (2020) [20]	W
3	West et al (2021) [21]	M
4	Martín-Asuero et al (2014) [22]	M
5	Cheng et al (2015) [23]	S
6	Schroeder et al (2016) [24]	M
7	Gardiner et al (2004) [25]	M
8	Gardiner et al (2013) [26]	W
9	Holt et al (2006) [27]	M
10	Amutio et al (2015) [28]	M
11	Fortney et al (2013) [29]	W
12	Krasner et al (2009) [30]	W
13	Montero-Marín et al (2017) [31]	W
14	Wietmarschen et al (2018) [32]	W

S: strong; M: Moderate; W: Weak.

The EPHPP scale was applied to assess the quality of the studies in the articles. 42% of them were classified as weak in the general classification; however, as can be seen in Supplemental Table 1, this is largely due to the fact that most of the studies (85%) were classified as weak in category A, which assesses bias in the selection of the participants because most of them were self-selected access.

Of the 14 studies, 71% had a strong study design – either random clinical trials (RCT) or clinical control trials (CCT) – while the remaining 29% were single cohort studies (CBA: control before and after). All of the studies scored strongly in Category E, data collection methods, while 58% of them scored weakly in Category D, blinding. The number of participants varied highly in the studies, ranging from 9 to 120 participants.

After evaluating the quality of the studies, a thematic analysis was carried out to evaluate the role of motivation in the interventions. The atlas.ti V23 software was used to perform a text search and to encode mentions that included the following terms (and their inflections): 'motivation', 'engagement', 'commitment', 'empowerment', 'involvement', 'intention', 'agency', and 'participation'. The findings, categories, and the synthesized findings were recorded in a table.

Patient and public involvement

This research was done without patient or public involvement.

FINDINGS

What type of interventions are being carried out to improve the well-being of PCPs?

Taking as a reference the design strategy of each intervention and its objective, the studies were classified according to the type of interventions carried out. Mindfulness was used in 50% of the studies, while the other 50% used various strategies such as coaching, discussion groups, gratitude journals, and cognitive-behavioural training. Table 2 shows the interventions used in the studies, along with the authors, the date of the study, the study design and the sample size.

Table 2 Type of intervention and study design.

	Study ID	Design	N°	Intervention
1	Amutio et al (2015) [28]	RCT	21	Mindfulness
2	Schroeder et al (2016) [24]	RCT	15	Mindfulness
3	Martín-Asuero et al (2014) [22]	CCT	43	Mindfulness
4	Fortney et al (2013) [29]	CBA	30	Mindfulness
5	Krasner et al (2009) [30]	CBA	70	Mindfulness
6	Montero-Marin et al (2017) [31]	CBA	58	Mindfulness
7	Wietmarschen et al (2018) [32]	CBA	54	Mindfulness

8	Cheng et al (2015) [23]	RCT	34	Gratitude diary
9	West et al (2014) [19]	RCT	37	Discussion groups
10	McGonagle et al (2020) [20]	RCT	29	Coaching
11	West et al (2021) [21]	RCT	64	Discussion groups
12	Gardiner et al (2004) [25]	CCT	85	Cognitive Behavioural training
13	Gardiner et al (2013) [26]	CCT	69	Cognitive Behavioural coaching
14	Holt et al (2006) [27]	CCT	106	E-mail feedback about individual distress levels and a self-help sheet

RCT: random clinical trial; CCT: control clinical trial; CBA: control before and after; N°: number PCP participants in group intervention.

Although half of the articles employ mindfulness programs in their intervention strategy, it should be noted that, in most cases, a multi-component program is employed which includes various other elements such as psychoeducation, discussion groups, narrative and appreciative inquiry exercises on communication skills. This makes it difficult to determine the impact of each of the different elements of the program on the results.

Which well-being indicators are used to assess outcomes, and which instruments are used to assess them?

The main well-being indicators used in the articles to assess the outcomes of the interventions were identified, and the instruments used to assess them were recorded. These indicators may measure positive aspects (e.g., resilience) or negative aspects (e.g., burnout). Only indicators assessed in at least two studies were recorded in the summary table. Table 3 indicates how commonly these indicators were used in the selected articles, and the instruments used to assess them.

Table 3 Well-being indicators, the number of studies that used them, and the instruments used to assess them.

	Well-being indicators	N° of Studies	Instruments used to assess indicators
1	Mindfulness	5	FFMQ, MAAS
2	Job Satisfaction	3	PWS

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3	Meaning at Work	2	EWS
4	Resilience	3	BRS
5	Compassion	6	SCB SC, JSEP (compassion subscale)
6	Empowerment	3	EWS
7	Engagement	2	JES
8	Empathy	3	JSPE
9	Self Reflection	2	Diaries
10	Psychological Capital	2	PCS
11	Burnout	9	MBI, BCSQ
12	Distress	10	PSS, SIG, GHQ-12, PANAS
13	Depression	7	PRIME-M, PCS, POMS, GHQ-12
14	Mood disturbance	2	POMS

Positive and negative well-being indicators have been marked with a different colour. *N° of studies* refers to the number of studies that assessed the indicator (only those assessed in more than two studies were recorded in the table); *FFMQ*: Five Facet Mindfulness Questionnaire [33]; *MAAS*: Mindful Attention Awareness Scale [34]; *PWS*: Physician Worklife Survey [35]; *EWS*: Empowerment at Work Scale [36]; *BRS*: Brief Resilience Scale [37]; *SCBCS*: Santa Clara Brief Compassion Scale [38]; *JES*: Job Engagement Scale [39]; *JSEP*: Jefferson Scale of Physician Empathy [40]; *MBI*: Maslach Burnout Inventory [41]; *BCSQ*: Burnout Clinical Subtypes Questionnaire [42]; *PSS*: Perceived Stress Scale [43]; *SIG*: Stress In General scale [44]; *PANAS*: positive and negative affect [45]; *GHQ-12*: General Health Questionnaire 12 [46]; *PRIME-M*: Primary Care Evaluation of Mental Disorders [47]; *PCS*: Psychological Capital Questionnaire [48]; *POMS*: Profile Of Mood States [49].

There were sixteen indicators used to assess well-being among PCPs. Two of these, *social support* and *fatigue*, are not listed in Table 3 since they were only assessed in a single study but were included in the analysis. Distress and burnout, as indicators of lack of well-being, were used by nearly all of the studies: 71% evaluated distress and 64% burnout, whereas only one of the studies did not evaluate either aspect. The Maslach Burnout Inventory [41] was applied in 57% of the studies evaluated, and the Perceived Stress Scale[43] in 35%.

Some of the indicators used in the studies referred to positive health aspects were: mindfulness, job satisfaction, meaning at work, resilience, compassion, empowerment, engagement, empathy, self reflection and psychological capital. A number of different scales were employed to measure these parameters before and after the intervention. To evaluate the interventions, 21% of the studies opted for their own assessment tools that were not validated.

What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained?

Table 4 lists the theoretical foundations supporting the interventions carried out in the studies in this review. Mindfulness programs are based mostly on the program designed by Kabat-Zinn (Mindfulness-Based Stress Reduction, MBSR).[50] Regarding the rest, all the proposed interventions take a cognitive-behavioural approach.

Table 4 Theoretical models and mechanisms of action proposed for the reviewed interventions.

	Author(s) (publication year)	Theoretical background	Proposed MoAs
1	West et al (2014) [19]	Not specified (previous literature)	<ul style="list-style-type: none">- Self-awareness- Self-reflection- Meaning- Values clarification- Personal resources- Small group discussion and reflection- Community building- Enhanced sense of connectedness
2	McGonagle et al (2020) [20]	Positive psychology – PERMA model (Seligman & Csikszentmihalyi, 2000; Seligman, 2012)	<ul style="list-style-type: none">- Building personal resources and resilience- Reframing- Setting client-centred goals- Setting client-centred action plans- Using strengths in new ways- Mindfulness reflections- Gratitude reflections- Promoting feelings of empowerment and self-efficacy- Job crafting- Positive emotions- Engagement- Positive relationships- Meaning- Achievements
3	West et al (2021) [21]	Not specified (previous literature)	<ul style="list-style-type: none">- Meaning- Community building- Social connection- Topics discussion
4	Martin-Asuero et al (2014) [22]	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	<ul style="list-style-type: none">- Enhanced self-awareness- Psychological flexibility- Emotional self-regulation
5	Cheng et al (2015)[23]	Transactional model of stress and	<ul style="list-style-type: none">- Positive thinking

		coping (Lazarus & Folkman, 1984)	<ul style="list-style-type: none"> - Active coping - Seeking social support - Decreased negative emotions - Reduction of materialistic pursuits - Enhanced accessibility to positive memories - Improved relationships - Enhanced spiritual well-being
6	Schroeder et al (2016) [24]	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008; Fortney et al., 2013)	<ul style="list-style-type: none"> - Intentional regulation of attention and awareness of the present moment - Nonjudgmental and curious willingness to experience contents of the present moment - Compassion skills - Communication skills (SLO)
7	Gardiner et al (2004) [25]	Cognitive Behavioural Theory Stress and Coping	<ul style="list-style-type: none"> - Training of specific coping styles (improved logical analysis and problem solving; decreased emotional discharge)
8	Gardiner et al (2013) [26]	Cognitive Behavioural Coaching	<ul style="list-style-type: none"> - Self-management skills - Attitudinal changes - Psychological hardiness - Decreased perceived loneliness feelings
9	Holt et al (2006) [27]	Transtheoretical Theory of Change (Prochaska & DiClemente, 1984)	<ul style="list-style-type: none"> - Feedback on distress assessment results - Consciousness raising about one's own health and emotional arousal
10	Amutio et al (2015) [28]	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	<ul style="list-style-type: none"> - Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills
11	Fortney et al (2013) [29]	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008)	<ul style="list-style-type: none"> - Being more present - Mindful attitudes - Communication skills - Compassion for self and others
12	Krasner et al (2009) [30]	Theory of mindful practice (Epstein, 1999)	<ul style="list-style-type: none"> - Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills

13	Montero-Marín et al (2017) [31]	(Modified version of MBSR) (Kabat-Zinn, 1982; Kabat-Zinn et al., 1985)	<ul style="list-style-type: none">- Non-judgemental awareness of moment-to-moment experience- Attention to one’s current actions- Emotional self-regulation- Acquisition of personal resources
14	Wietmarschen et al (2018) [32]	(Modified version of MBSR) (Kabat-Zinn, 1990)	<ul style="list-style-type: none">- Attention- Self-regulation- Values clarification- Psychological flexibility- Increased awareness of one’s own feelings and thoughts- Increased acceptance, peacefulness and openness to the self and others

MoAs: Mechanisms of Action; PERMA model: Positive emotions, Engagement, Relationships, Meaning, and Achievements; MBSR: Mindfulness-Based Stress Reduction.

What role does individual motivation play in interventions to improve well-being among PCPs?

Having first eliminated mentions that appeared in the references section of the papers, a thematic analysis of the 105 citations selected was carried out. The findings were classified into four defined categories with the objective of evaluating the role of motivation in the interventions applied. As shown in Table 5.

Table 5 Role of motivation in the interventions reviewed.

Category	Role
Intention and motives for taking part in the intervention	<ul style="list-style-type: none">- This refers to the intentions or motives behind people’s decisions to participate in interventions, which may have differential effects on treatment results (e.g., “Well-being enhancement motive” or “Distress reduction motive” [51]. None of the interventions were found to specifically assess the intentions of the participants. Intention is mentioned only once [32] (“why one is practicing”), in reference to the work of Shapiro et al on the mechanisms of action of mindfulness [52].
Adherence to treatment	<ul style="list-style-type: none">- Although most of the interventions involve self-selected participants, many of the authors point out that motivation and commitment is required to follow the treatment and carry out the activities required in the programs. Adherence to treatment is an obstacle to completing the intervention.- Three citations refer to the <i>institutional commitment</i> to wellness programs for PCPs personnel.
Individual motivation as a result of the interventions	<ul style="list-style-type: none">- In this category, motivation is considered to be a component of eudaimonic well-being and is assessed as an indicator of the outcome of the intervention. Most of the mentions of engagement and empowerment belong to this category and refer mainly to work-related engagement.- In two cases, improvements in empathy and motivation of PCPs personnel are mentioned: (i) for promoting patient participation in care, and (ii) listening to others and understanding the other’s experience.- Most mentions of intention refer to ‘turnover intention’ or ‘intention to leave [the

	organization]' and are assessed as indicators of the outcome of the interventions.
Personal agency	- Three quotes refer to personal agency as an element to take into account during the interventions, in relation to (i) the ability to influence the organizational environment (e.g., "...we speculate that improving job self-efficacy might have required a specific focus of coaching to help coachees identify and accept where they do and do not have agency in reconfiguring their jobs" [20]; (ii) "involvement in decision making and defining roles and expectations"[23] or (ii) "agency and control over goal striving" [20].

DISCUSSION

Although in recent years there has been an upward trend in the number of studies that seek to improve and evaluate well-being among PCPs, much remains to be investigated. Many of the interventions analyzed attempt to answer what Shapiro et al [52] call the first-order question, "Are interventions effective?", but do not empirically answer the second-order question, "How do the interventions actually work?"

Some of the studies analyzed have important methodological limitations. First, the participants in these studies voluntarily decided to take part in them. This implies a selection bias as PCPs who sign up to participate are likely to be more motivated to improve their well-being, while those who may need the intervention the most do not take part [23,27]. What also needs investigating is whether the treatments that are proposed to improve well-being meet the needs of potential participants. Secondly, the study samples are small and not representative, which may threaten their external validity. Thirdly, in some cases, the intervention did not include a control group. Finally, difficulties, in terms of completing the treatment and post-intervention follow-up with all the initial participants, were also evident in some of the studies.

The lack of well-being at work is assessed in most studies, with distress and *degree of burnout* being used as indicators. Positive outcomes, such as those referring to level of *mindfulness*, *empowerment*, *commitment* and *resilience* are also assessed, but less frequently. This raises the question of which is more effective for evaluating well-being: the absence of negative outcomes or the presence of positive outcomes. As Karademas et al [53] states well-being it is more reasonable to think of as a parallel construct of negative and positive outcomes rather than as a continuum.

With regard to the mechanisms of action that are proposed to explain the results of interventions, many of the studies use multi-component programs without adequate controls that would allow researchers to determine which mechanisms of action are actually working. The clearest case of this relates to the methods used to apply the interventions, which mostly involve group work. In many studies, the participants share experiences and problems, discuss work issues, seek solutions together and, ultimately, give each other support. However, variables such as socialization of beliefs, norms and

values, as well as bonding and social support are not explicitly controlled and assessed as part of the intervention.

Although most of the works include some specific theoretical background about the interventions, the focus of them is mainly pragmatic, and is not aimed at verification or theoretical construction which makes the reproducibility of the intervention and the assessment of its effectiveness difficult. The results reveal a certain bias in how individual motivation is treated in the interventions. Mostly, the impact on work-related results is evaluated and, to a lesser extent, on other dimensions such as relationships with others or orientation towards patients. But there is also a need to investigate personal reasons for participating in the interventions, since different motivations may lead to differential results of the treatments applied [51].

It was observed that some studies did not use validated scales in their entirety, probably due to their excessive length. New tools may be necessary to measure well-being, or lack of it, as well as briefer and easier-to-apply designs that improve levels of adherence to treatment. Most of the interventions focused on strategies aimed at reducing stress, and produced results that imply an improvement after the intervention. However, the sample sizes and selection criteria do not allow the results to be extrapolated.

More studies on the subject are needed to provide more precise definitions of the determinants of well-being at work; the interventions aimed at improving it and their mechanisms of action; the appropriate indicators and scales to measure them; and the motivations PCPs workers have to participate.

LIMITATIONS

We have excluded studies carried out before 2000, because the literature on well-being at work in medicine is a more current research trend and, moreover, medical practice has changed substantially in the last two decades. Voluntary participation and self-reported measurements may cause bias, considering that different health systems and cultural differences among participants make comparisons difficult.

CONCLUSION

Despite the growing interest in improving well-being among PCPs at work, the available clinical evidence on the interventions carried out does still do not allow us to provide an accurate assessment of their effectiveness. More research, and more controlled studies, are needed to determine the specific mechanisms of action of the different interventions, as well as the motivations of the participants.

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OTHER INFORMATION

Contributorship statement: AF and EV conceptualised and designed the review. AF and EV reviewed titles, abstracts and full-text papers for eligibility. Authors resolved disagreement by discussion. AF was responsible for extracting data and all data extraction was verified by EV. AF and EV independently assessed the methodological quality of each study. AF and EV prepared, reviewed and edited the manuscript.

Competing interest: The authors declare that they have no competing interests.

Funding/Support: The authors received no financial support for the research, authorship and/or publication of this article. The authors received financial support from the university for translation purposes.

Data Sharing statement: Data sharing not applicable as no datasets generated and/or analysed for this study. All data relevant to the study are included in the article or uploaded as online supplemental information. All data underlying the results are available as part of the article and no additional source data are required.

Ethic Statements:

Patient consent for publication: not required.

Ethics approval: no ethical approval was needed because we used data from previous published studies.

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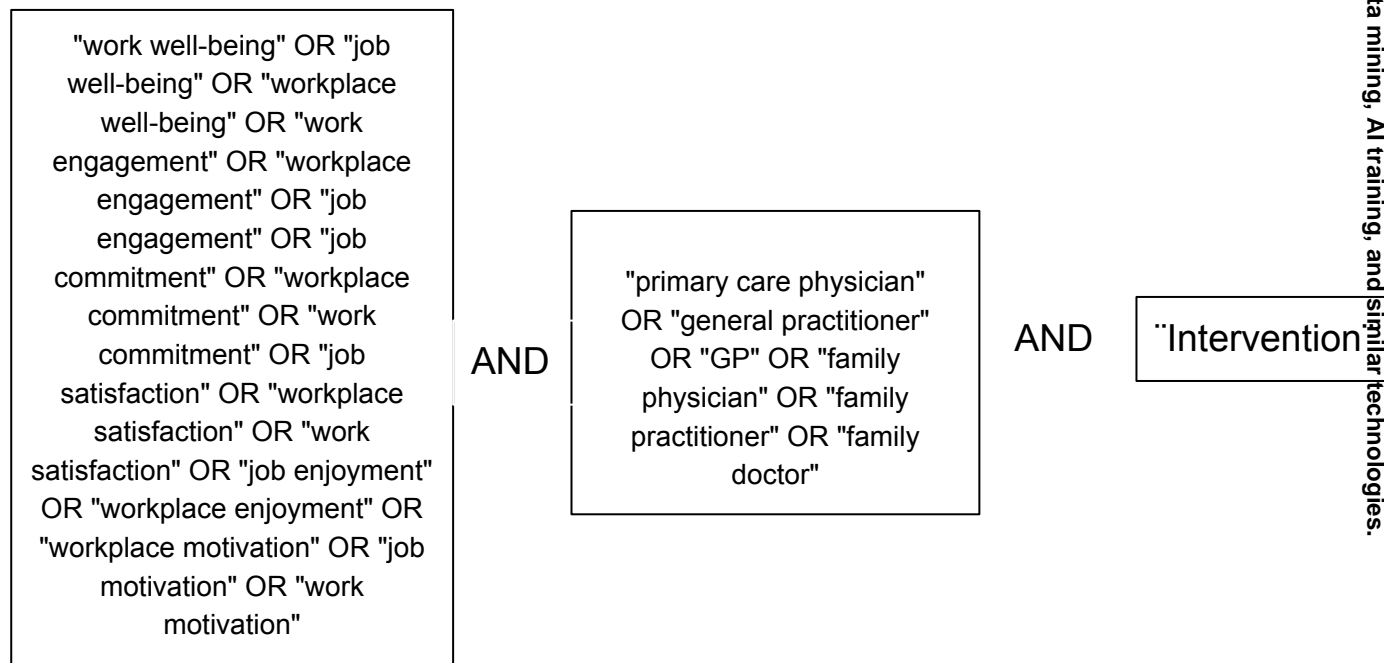
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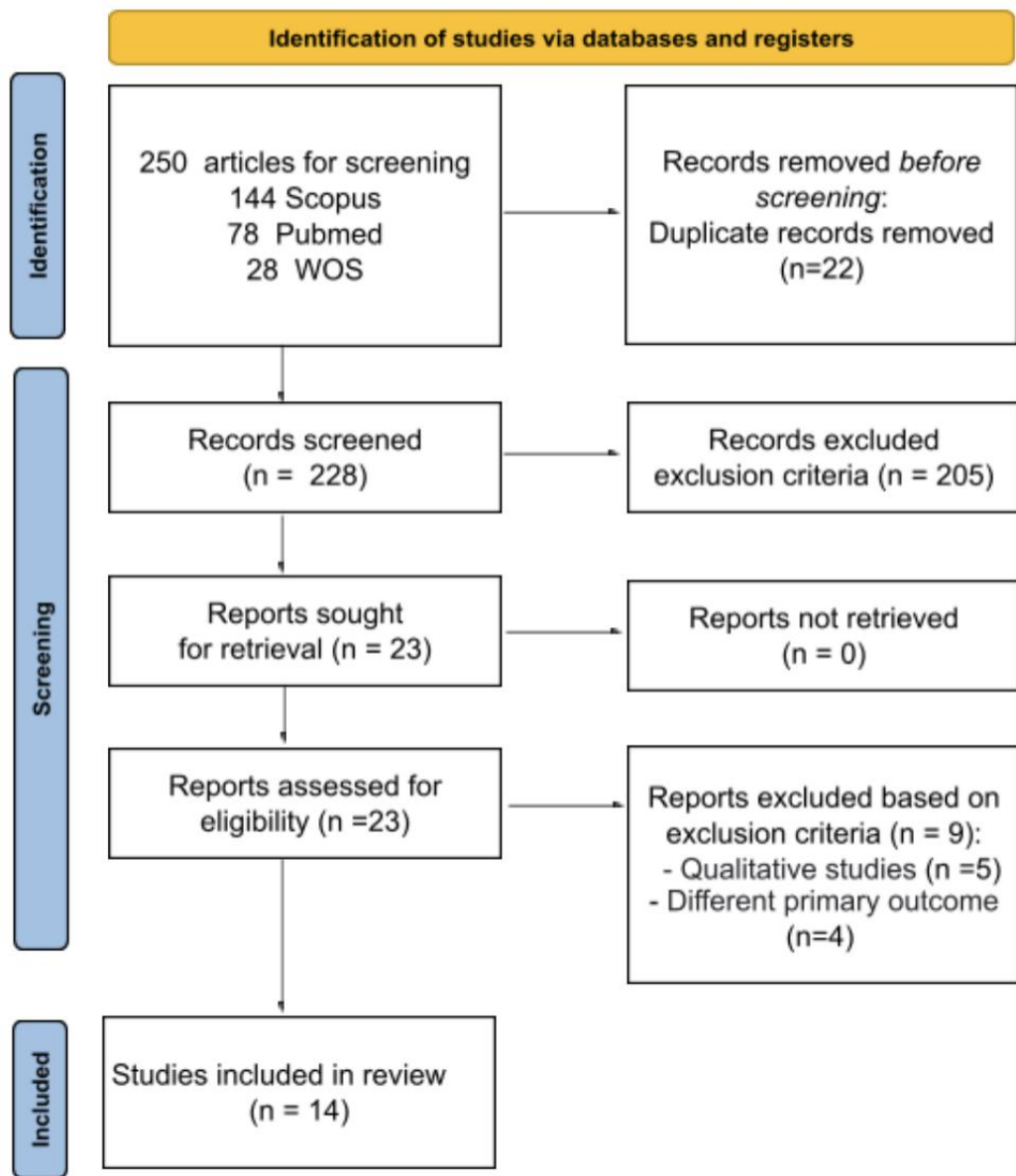
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Supplemental Figure 2 Flow diagram of article selection process (PRISMA guidelines 2020)[15]

Supplemental Table 1. Quality analysis based on the tool EPHPP.¹⁸

		A	B		C	D	E	F	TOTAL
	Author (year of publication)	R	DESIGN	R	R	R	R	R	
1	West et al (2014) ¹⁹	W	RCT	S	S	M	S	S	M
2	McGonagle et al (2020) ²⁰	W	RCT	S	S	W	S	M	W
3	West et al (2021) ²¹	W	RCT	S	S	M	S	S	M
4	Asuero et al (2014) ²²	W	CCT	S	S	M	S	S	M
5	Cheng et al (2015) ²³	M	RCT	S	S	S	S	S	S
6	Schroeder et al (2016) ²⁴	W	RCT	S	S	M	S	M	M
7	Gardiner et al (2004) ²⁵	W	CCT	S	S	W	S	M	M
8	Gardiner et al (2013) ²⁶	W	CCT	S	S	W	S	W	W
9	Holt et al (2006) ²⁷	M	CCT	S	S	W	S	M	M
10	Amutio et al (2015) ²⁸	W	RCT	S	S	M	S	S	M
11	Fortney et al (2013) ²⁹	W	CBA	M	S	W	S	M	W
12	Krasner et al (2009) ³⁰	W	CBA	M	W	W	S	M	W
13	Montero-Marín et al (2017) ³¹	W	CBA	M	W	W	S	W	W
14	Wietmarschen et al (2018) ³²	W	CBA	M	W	W	S	W	W

A: Selection bias; B: Study design; C: Confounders; D: Blinding; E: Data collection method; F: Withdrawals and dropouts; R: Rating; S: strong; M: Moderate; W: Weak; RCT: Random clinical trial; CCT: Control clinical trial; CBA: Control before and after.



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	5
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	5
Data items	10 a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	5
	10 b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	5

Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	NA
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study/intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	8
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	8
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software packages used.	6
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting bias).	7
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	7



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	6
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	6

Study characteristics	17	Cite each included study and present its characteristics.	7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	7
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) a effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	7
Results of syntheses	20 a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	7
	20 b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20 c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20 d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23 a	Provide a general interpretation of the results in the context of other evidence.	14
	23 b	Discuss any limitations of the evidence included in the review.	15
	23 c	Discuss any limitations of the review processes used.	15
	23 d	Discuss implications of the results for practice, policy, and future research.	15
OTHER INFORMATION			
Registration and protocol	24 a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	NA
	24 b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	NA

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	24 c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	15
Competing interests	26	Declare any competing interests of review authors.	16
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	NA

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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BMJ Open

The role of motivation and well-being indicators in interventions to improve well-being at work among primary care physicians– A systematic review.

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2023-075799.R3
Article Type:	Original research
Date Submitted by the Author:	21-Feb-2024
Complete List of Authors:	Florez, Adriana; Hospital de Palamós, SSIBE- ABS Palamos Villar-Hoz, Esperanza; Universitat de Girona, Psychology
Primary Subject Heading:	General practice / Family practice
Secondary Subject Heading:	Global health, Occupational and environmental medicine
Keywords:	Occupational Stress, Primary Health Care, Physicians, Systematic Review

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Title

The role of motivation and well-being indicators in interventions to improve well-being at work among primary care physicians– A systematic review.

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Keywords: Physicians, Primary Care, Psychological Well-Being, Psychosocial Intervention, Motivation.

Word count: 3161.

Abstract:

Objective: The well-being of primary care physicians (PCP) has become an object of concern for governments due to a staff shortages and high staff turnover. The objective of this study was to carry out a systematic review of individualized interventions aimed at improving the well-being of PCPs, which allowed us to determine (1) the type of interventions being carried out; (2) the well-being indicators being used, and the instruments used to assess them; (3) the theories proposed to support the interventions and the mechanisms of action (MoA) put forward to explain the results obtained; and (4) the role that individual motivation plays in the interventions to improve well-being among PCPs.

Design: Systematic review.

Eligibility criteria: Clinical trials on interventions aimed at improving the well-being of PCPs.

Information sources: a search of studies published between 2000 and 2022 was carried out in MEDLINE/PubMed, SCOPUS, and Web of Science (WOS).

Results: From the search, 250 articles were retrieved. The two authors each reviewed the articles independently, duplicate articles and those that did not meet the inclusion criteria were discarded. A total of 14 studies that met the criteria were included: six randomized clinical trials, four controlled clinical trials, and four unique cohorts, with a before-and-after assessment of the intervention, involving a total of 655 individuals participating in the interventions. A meta-analysis was not possible due to the heterogeneity of the studies.

Conclusions: The information evaluated is insufficient to accurately assess which outcomes are the best indicators of PCPs well-being or what roles plays the individual motivation in the the results of the interventions. More studies need to be carried out on the subject to determine the mechanisms of action of the different interventions on the results, and the motivation of the participating PCPs.

Strengths and Limitation of this study

- The information about interventions for improving well-being among primary care physicians and the motivational mechanisms of action that support them seems scattered.
- Most of the studies reviewed had a strong design, however the samples were small, which diminishes the external validity of the results.

- The study examines the role of individual motivation and agency in intervention to improve PCPs occupational well-being.
- The existence of multiple motivational constructs was a limitation to a comprehensive search strategy.
- The systematic review protocol wasn't registered in PROSPERO.

INTRODUCTION:

Primary care physicians (PCP) play a key role within the health system. They are often the first point of contact with the patient; in many cases, they know them personally and are aware of their social and family environment. PCPs thus become a vital link in the chain of hospital treatment and social health care, providing patients with follow-up and support.[1]

However, in recent years it has become a challenge to cover all the PCPs posts required for an adequate patient/doctor ratio¹ and to reduce staff turnover. PCPs shortages are a considerable problem, with impacts on public health around the world. One reason put forward to explain the problem is the high percentage of primary care personnel at risk of burnout.[2] In a study carried out by the European General Practice Research Network (EGPRN) on PCPs throughout Europe, it was shown that 43% of professionals suffered emotional exhaustion due to work and that 12% obtained high scores in the three components of burnout (emotional exhaustion; depersonalization; and personal accomplishment).[3]

Various studies have been carried out to assess whether these elevated levels of burnout among PCPs influences the medical care offered to the patient.[4] A systematic review carried out in 2019, found that exhaustion among healthcare professionals increases the possibility of medical errors and that this can affect patient safety.[5] It was also shown that burnout impinges on the workers' quality of life, leading to increases in absenteeism from exhaustion, and more staff leaving the healthcare profession. This poses considerable difficulties for patient care – the central pillar of primary care. An earlier systematic review on burnout in PCPs, carried out in 2018, recommended broadening approaches aimed at improving health systems so as to include, as an objective, improving the lives of health professionals and their experience at work.[6] This approach coincides with a paradigm shift in occupational health studies, which has led to focussing attention not only on the prevention of burnout and the risks derived from work, but also on fostering the health and well-being of workers. Expanding the focus of occupational health towards a perspective centred on the well-being of the worker has been influenced by, among others, United Nations recognition of health and wellbeing as a sustainable development goal; The World Health Organization's model for action[7]; the policy guidelines published by the UK's National Institute for Health and Care Excellence aimed at improving workers' health and well-being[8]; and the promotion of healthy organizations based on the contributions of positive psychology[9]. With this new approach, improving the health and well-being of workers

constitutes an end in itself; it is not subordinated solely to the productive demands of the organization, but oriented towards a relationship of “mutual gains” for all stakeholders.[10]

In this context, it no longer makes sense to make a distinction between person-centred interventions and contextualized interventions acting on organizational and environmental determining factors: the two strategies – aimed at improving well-being – are complementary. Individual interventions are still necessary to foster motivation and facilitate measures that are committed to the goals of personal, organizational and social well-being.

Individual well-being is defined “as an integrative concept that characterizes quality of life with respect to an individual’s health and work-related environmental, organizational, and psychosocial factors. Well-being is the experience of positive perceptions and the presence of constructive conditions at work, and beyond, that enables workers to thrive and achieve their full potential”.[11] This definition includes the two theoretical traditions that have dealt with the study of well-being: Hedonic Well-Being (HWB) and Eudaimonic Well-Being (EWB).[12] Hedonic well-being is usually linked to the concept of Subjective Well-Being (SWB), and includes the components of pleasant affect, unpleasant affect and life satisfaction.[13] On the other hand, from a eudaimonic perspective, well-being is considered as the individual ideal that provides purpose and direction to one’s life, through personal growth and self-realization.[14]

Although notable progress has been made in recent years both in research and in the definition and operationalization of occupational well-being as a construct,[11] less attention has been devoted to the role of motivation and individual agency in research on interventions aimed at improving it. The objective of this study is to carry out a systematic review to evaluate the current research available on individualized interventions aimed at improving the well-being of PCPs based on the following questions: (1) What type of interventions are being carried out to improve the well-being of PCPs? (2) Which well-being indicators are used to assess outcomes, and which instruments are used to assess them? (3) What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained? And (4) what role does individual motivation play in interventions to improve well-being among PCPs?

METHODS

Data sources, search strategy and study selection

A systematic review protocol was designed in line with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[15] We consulted a specialist librarian in thematic documentation in Psychology from [omitted for blind peer review] in order to define the search descriptors. The search was carried out in the MEDLINE/PubMed, Scopus and WOS databases, in October 2022.

Terms were selected following the PICO strategy (Population, Intervention, Comparison, Outcome). Population was defined as currently active, primary care physician, for which the Medical Subject Headings (MeSH) terms used were: “primary care physician” OR “general practitioner” OR “GP” OR “family physician” OR “family practitioner” OR “family doctor”. The MeSH term: “intervention” was used for the search. The main outcomes indicators referred to motivation and well-being at work, for which various MeSH terms appearing in titles, abstracts or keywords were used: “job well-being” OR “work engagement” OR “workplace commitment” OR “job satisfaction” OR “workplace enjoyment” OR “workplace motivation” and other synonyms. The search strategy is shown in supplemental Figure 1.

The search was carried out using MeSH terms in the MEDLINE/PubMed database, the search in SCOPUS and WOS was made using natural language indexing as they don't employ controlled vocabulary or thesaurus; afterwards, a manual search was carried out, and we also reviewed the references of similar systematic reviews for further relevant references. It was limited to quantitative experimental and quasi-experimental articles published between 2000 and 2022, available in Spanish, English and French. We included clinical trials, controlled trials and single cohorts (CBA: control before and after). Only articles in which the target population were PCPs were included and, of those where other members of the primary care team participated, only the data corresponding to PCPs were taken into account.

Articles where interventions were carried out to improve the well-being of doctors in training were discarded. Also excluded were articles in which the intervention was carried out at the organizational level or in the health system, or those in which the primary outcome was not PCPs well-being. Figure 1 shows the process of identification, screening and selection of the articles.

After the preliminary search, each author first read the titles independently, and then the information was pooled. 250 articles were found that met the criteria of population target, publication date, study design and language. They were manually reviewed to exclude duplicates, leaving 228 abstracts. After a closer inspection through the abstracts 205 were discarded because they did not meet the inclusion criteria. The full texts of the 23 selected articles were retrieved and then read in depth, and nine of these were discarded for not meeting the inclusion criteria.

For example, studies such as the one by Rees et al [16] were not included because they involved mixed designs in which the qualitative component was used to evaluate the outcome; in total there were five articles discarded for this reason. Four other articles were discarded because they focussed on a different primary outcome, for example the objective of Dunn et al [17] was to improve the well-being of the organization and the quality of patient care.

Data extraction and risk of bias

The search was carried out independently by each author, AF and EV, the information was pooled and

registered in a summary table. Subsequently, and again independently, we used the Effective Public Health Practice Project (EPHPP)[18] to assess the quality of the selected studies; the discrepancies in the items were discussed and agreed upon. We chose the EPHPP tool as a quality assessment measure because it is designed to comprehend a wider range of study designs and takes into account the validity and reliability of data collection methods, which fits with our object of study. Table 1 shows the evaluation of the quality of the studies using the EPHPP tool.

Table 1 Quality analysis based on the tool EPHPP.

Autor (año de publicación)	A	B	C	D	E	F	TOTAL
West et al (2014) [19]	W	S	S	M	S	S	M
McGonagle et al (2020)[20]	W	S	S	W	S	M	W
West et al (2021)[21]	W	S	S	M	S	S	M
Martín-Asuero et al (2014)[22]	W	S	S	M	S	S	M
Cheng et al (2015)[23]	M	S	S	S	S	S	S
Schroeder et al (2016)[24]	W	S	S	M	S	M	M
Gardiner et al (2004)[25]	W	S	S	W	S	M	M
Gardiner et al (2013)[26]	W	S	S	W	S	W	W
Holt et al (2006)[27]	M	S	S	W	S	M	M
Amutio et al (2015)[28]	W	S	S	M	S	S	M
Fortney et al (2013)[29]	W	M	S	W	S	M	W
Krasner et al (2009)[30]	W	M	W	W	S	M	W
Montero-Marín et al (2017)[31]	W	M	W	W	S	W	W
Wietmarschen et al (2018)[32]	W	M	W	W	S	W	W

A: Selection bias. B: Study design. C: confounders. D: Blinding. E: Data collection method. F: withdrawals and dropouts. R: rating. S: strong. M: moderate. W: weak.

The EPHPP scale was applied to assess the quality of the studies in the articles. In the general classification 42% of the studies were classified as weak, this is due to the fact that 85% of the studies were classified as weak in category A (which assesses bias in the selection of the participants) because they participate voluntarily. In only 14% of the articles the participants were selected in a systematic way. Of the 14 studies, 77% had a strong study design – 42% were random clinical trials (RCT) and 35% were clinical control trials (CCT) – the remaining 23% were single cohort studies (CBA: control before and after). All of the studies scored strongly in Category E that correspond to data collection

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methods. In the Category D - Blinding, 57% of the articles scored weakly because the participants knew the objective of the intervention as they chose to participate in them.

After evaluating the quality of the studies, they were organized into tables in order to register the main findings. Including the type of intervention, the number of participants, the well-being indicators and the test used to evaluate them. Subsequently, an analysis of the theoretical models and mechanisms of action proposed for the reviewed interventions was carried out.

Afterwards a thematic analysis was carried out to evaluate the role of motivation in the interventions. The atlas.ti V23 software was used to perform a text search and to automatically encode mentions that included the following terms (and their inflections): 'motivation', 'engagement', 'commitment', 'empowerment', 'involvement', 'intention', 'agency', and 'participation'. The text segments in each code were analysed inductively to generate recurring patterns of meaning across the motivational constructs used in the interventions and thematic categories were developed in relation to the research question.

Patient and public involvement

This research was done without patient or public involvement.

FINDINGS

What type of interventions are being carried out to improve the well-being of PCPs?

Taking as a reference the design strategy of each intervention and its objective, the studies were classified according to the type of interventions carried out. Mindfulness was used in 50% of the studies, while the other 50% used various strategies such as coaching, discussion groups, gratitude journals, and cognitive-behavioural training. Table 2 shows the interventions used in the studies, along with the authors, the date of the study, the study design and the sample size.

Table 2 Type of intervention and study design.

	Study ID	Design	N°	Intervention
1	Amutio et al (2015) [28]	RCT	21	Mindfulness
2	Schroeder et al (2016) [24]	RCT	15	Mindfulness

3	Martín-Asuero et al (2014) [22]	CCT	43	Mindfulness
4	Fortney et al (2013) [29]	CBA	30	Mindfulness
5	Krasner et al (2009) [30]	CBA	70	Mindfulness
6	Montero-Marin et al (2017) [31]	CBA	58	Mindfulness
7	Wietmarschen et al (2018) [32]	CBA	54	Mindfulness
8	Cheng et al (2015) [23]	RCT	34	Gratitude diary
9	West et al (2014) [19]	RCT	37	Discussion groups
10	McGonagle et al (2020) [20]	RCT	29	Coaching
11	West et al (2021) [21]	RCT	64	Discussion groups
12	Gardiner et al (2004) [25]	CCT	85	Cognitive Behavioural training
13	Gardiner et al (2013) [26]	CCT	69	Cognitive Behavioural coaching
14	Holt et al (2006) [27]	CCT	106	E-mail feedback about individual distress levels and a self-help sheet

RCT: random clinical trial; CCT: control clinical trial; CBA: control before and after; N^o: number PCP participants in group intervention.

Although half of the articles employ mindfulness programs in their intervention strategy, it should be noted that, in most cases, a multi-component program is employed which includes various other elements such as psychoeducation, discussion groups, narrative and appreciative inquiry exercises on communication skills. This makes it difficult to determine the impact of each of the different elements of the program on the results.

Which well-being indicators are used to assess outcomes, and which instruments are used to assess them?

The main well-being indicators used in the articles to assess the outcomes of the interventions were identified, and the instruments used to assess them were recorded. These indicators may measure positive aspects (e.g., resilience) or negative aspects (e.g., burnout). Only indicators assessed in at least two studies were recorded in the summary table. Table 3 indicates how commonly these indicators were used in the selected articles, and the instruments used to assess them.

Table 3 Well-being indicators, the number of studies that used them, and the instruments used to assess them.

	Well-being indicators	N° of Studies	Instruments used to assess indicators
1	Mindfulness	5	FFMQ, MAAS
2	Job Satisfaction	3	PWS
3	Meaning at Work	2	EWS
4	Resilience	3	BRS
5	Compassion	6	SCB SC, JSEP (compassion subscale)
6	Empowerment	3	EWS
7	Engagement	2	JES
8	Empathy	3	JSPE
9	Self Reflection	2	Diaries
10	Psychological Capital	2	PCS
11	Burnout	9	MBI, BCSQ
12	Distress	10	PSS, SIG, GHQ-12, PANAS
13	Depression	7	PRIME-M, PCS, POMS, GHQ-12
14	Mood disturbance	2	POMS

Positive and negative well-being indicators have been marked with a different colour. *N° of studies* refers to the number of studies that assessed the indicator (only those assessed in more than two studies were recorded in the table); *FFMQ*: Five Facet Mindfulness Questionnaire [33]; *MAAS*: Mindful Attention Awareness Scale [34]; *PWS*: Physician Worklife Survey [35]; *EWS*: Empowerment at Work Scale [36]; *BRS*: Brief Resilience Scale [37]; *SCBSCS*: Santa Clara Brief Compassion Scale [38]; *JES*: Job Engagement Scale [39]; *JSEP*: Jefferson Scale of Physician Empathy [40]; *MBI*: Maslach Burnout Inventory [41]; *BCSQ*: Burnout Clinical Subtypes Questionnaire [42]; *PSS*: Perceived Stress Scale [43]; *SIG*: Stress In General scale [44]; *PANAS*: positive and negative affect [45]; *GHQ-12*: General Health Questionnaire 12 [46]; *PRIME-M*: Primary Care Evaluation of Mental Disorders [47]; *PCS*: Psychological Capital Questionnaire [48]; *POMS*: Profile Of Mood States [49].

There were sixteen indicators used to assess well-being among PCPs. Two of these, *social support* and *fatigue*, are not listed in Table 3 since they were only assessed in a single study but were included in the analysis. Distress and burnout, as indicators of lack of well-being: 71% evaluated distress and 64% burnout, whereas only one of the studies did not evaluate either aspect. The Maslach Burnout Inventory [41] was applied in 57% of the studies evaluated, and the Perceived Stress Scale [43] in 35%.

Some of the indicators used in the studies referred to positive health aspects were: mindfulness, job satisfaction, meaning at work, resilience, compassion, empowerment, engagement, empathy, self

reflection and psychological capital. A number of different scales were employed to measure these parameters before and after the intervention. To evaluate the interventions, 21% of the studies opted for their own assessment tools that were not validated.

What theories support such interventions, and what mechanisms of action (MoA) are proposed to explain the results obtained?

Table 4 lists the theoretical foundations supporting the interventions carried out in the studies in this review. Mindfulness programs are based mostly on the program designed by Kabat-Zinn (Mindfulness-Based Stress Reduction, MBSR).[50] Regarding the rest, all the proposed interventions take a cognitive-behavioural approach.

Table 4 Theoretical models and mechanisms of action proposed for the reviewed interventions.

	Author(s) (publication year)	Theoretical background	Proposed MoAs
1	West et al (2014) [19]	Not specified (previous literature)	<ul style="list-style-type: none">- Self-awareness- Self-reflection- Meaning- Values clarification- Personal resources- Small group discussion and reflection- Community building- Enhanced sense of connectedness
2	McGonagle et al (2020) [20]	Positive psychology – PERMA model (Seligman & Csikszentmihalyi, 2000; Seligman, 2012)	<ul style="list-style-type: none">- Building personal resources and resilience- Reframing- Setting client-centred goals- Setting client-centred action plans- Using strengths in new ways- Mindfulness reflections- Gratitude reflections- Promoting feelings of empowerment and self-efficacy- Job crafting- Positive emotions- Engagement- Positive relationships- Meaning- Achievements
3	West et al (2021) [21]	Not specified (previous literature)	<ul style="list-style-type: none">- Meaning- Community building- Social connection

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			- Topics discussion
4	Martin-Asuero et al (2014) [22]	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	- Enhanced self-awareness - Psychological flexibility - Emotional self-regulation
5	Cheng et al (2015)[23]	Transactional model of stress and coping (Lazarus & Folkman, 1984)	- Positive thinking - Active coping - Seeking social support - Decreased negative emotions - Reduction of materialistic pursuits - Enhanced accessibility to positive memories - Improved relationships - Enhanced spiritual well-being
6	Schroeder et al (2016) [24]	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008; Fortney et al., 2013)	- Intentional regulation of attention and awareness of the present moment - Nonjudgmental and curious willingness to experience contents of the present moment - Compassion skills - Communication skills (SLO)
7	Gardiner et al (2004) [25]	Cognitive Behavioural Theory Stress and Coping	- Training of specific coping styles (improved logical analysis and problem solving; decreased emotional discharge)
8	Gardiner et al (2013) [26]	Cognitive Behavioural Coaching	- Self-management skills - Attitudinal changes - Psychological hardiness - Decreased perceived loneliness feelings
9	Holt et al (2006) [27]	Transtheoretical Theory of Change (Prochaska & DiClemente, 1984)	- Feedback on distress assessment results - Consciousness raising about one's own health and emotional arousal
10	Amutio et al (2015) [28]	Theory of mindful practice (Epstein, 1999; Krasner et al., 2009)	- Psychoeducation - Self-regulation of attention - Awareness - Non-judgmental acceptance of one's own experiences - Group discussion and reflection - Enhanced appreciative attitudes towards self and others - Communication skills
11	Fortney et al (2013) [29]	(Modified version of MBSR) (Ludwig & Kabat-Zinn, 2008)	- Being more present - Mindful attitudes - Communication skills - Compassion for self and others
12	Krasner et al (2009) [30]	Theory of mindful practice (Epstein, 1999)	- Psychoeducation - Self-regulation of attention - Awareness

			<ul style="list-style-type: none">- Non-judgmental acceptance of one's own experiences- Group discussion and reflection- Enhanced appreciative attitudes towards self and others- Communication skills
13	Montero-Marín et al (2017) [31]	(Modified version of MBSR) (Kabat-Zinn, 1982; Kabat-Zinn et al., 1985)	<ul style="list-style-type: none">- Non-judgemental awareness of moment-to-moment experience- Attention to one's current actions- Emotional self-regulation- Acquisition of personal resources
14	Wietmarschen et al (2018) [32]	(Modified version of MBSR) (Kabat-Zinn, 1990)	<ul style="list-style-type: none">- Attention- Self-regulation- Values clarification- Psychological flexibility- Increased awareness of one's own feelings and thoughts- Increased acceptance, peacefulness and openness to the self and others

MoAs: Mechanisms of Action; PERMA model: Positive emotions, Engagement, Relationships, Meaning, and Achievements; MBSR: Mindfulness-Based Stress Reduction.

What role does individual motivation play in interventions to improve well-being among PCPs?

Having first eliminated mentions that appeared in the references section of the papers, a thematic analysis of the 105 citations selected was carried out. Four defined thematic categories were developed with the objective of evaluating the role of motivation in the interventions applied, as shown in Table 5.

Table 5 Role of motivation in the interventions reviewed.

Thematic category	Role
Intention and motives for taking part in the intervention	<ul style="list-style-type: none">- This refers to the intentions or motives behind people's decisions to participate in interventions, which may have differential effects on treatment results (e.g., "Well-being enhancement motive" or "Distress reduction motive" [51]. None of the interventions were found to specifically assess the intentions of the participants. Intention is mentioned only once [32] ("why one is practicing"), in reference to the work of Shapiro et al on the mechanisms of action of mindfulness [52].
Adherence to treatment	<ul style="list-style-type: none">- Although most of the interventions involve self-selected participants, many of the authors point out that motivation and commitment is required to follow the treatment and carry out the activities required in the programs. Adherence to treatment is an obstacle to completing the intervention.- Three citations refer to the <i>institutional commitment</i> to wellness programs for PCPs personnel.
Individual motivation as a result	<ul style="list-style-type: none">- In this category, motivation is considered to be a component of eudaimonic well-being and is assessed as an indicator of the outcome of the intervention. Most of

of the interventions	<p>the mentions of engagement and empowerment belong to this category and refer mainly to work-related engagement.</p> <ul style="list-style-type: none"> - In two cases, improvements in empathy and motivation of PCPs personnel are mentioned: (i) for promoting patient participation in care, and (ii) listening to others and understanding the other's experience. - Most mentions of intention refer to 'turnover intention' or 'intention to leave [the organization]' and are assessed as indicators of the outcome of the interventions.
Personal agency	<ul style="list-style-type: none"> - Three quotes refer to personal agency as an element to take into account during the interventions, in relation to (i) the ability to influence the organizational environment (e.g., "...we speculate that improving job self-efficacy might have required a specific focus of coaching to help coachees identify and accept where they do and do not have agency in reconfiguring their jobs" [20]; (ii) "involvement in decision making and defining roles and expectations"[23] or (ii) "agency and control over goal striving" [20].

DISCUSSION

Although in recent years there has been an upward trend in the number of studies that seek to improve and evaluate well-being among PCPs, much remains to be investigated. Many of the interventions analyzed attempt to answer what Shapiro et al [52] call the first-order question, "Are interventions effective?", but do not empirically answer the second-order question, "How do the interventions actually work?".

The studies analyzed have methodological limitations. In 85% of the studies the participants voluntarily decided to take part in them, this implies a selection bias as PCPs who sign up to participate are likely to be more motivated to improve their well-being, while those who may need the intervention the most do not take part [23,27]. The intention to participate and individual motivation can play a role in the outcomes.

The interventions used in the studies are proposed to improve individuals well-being; however, the needs of the potential participants are not first evaluated in order to select the adequate intervention, which raises the question whether the intervention used was appropriate to improve well-being in PCPs.

Although participation in most studies was self-acceded, follow-up and continuity in the adherence to treatment was an obstacle. The study samples are small and not representative, threatening the external validity of interventions.

The lack of well-being at work is assessed in most studies, with distress and *degree of burnout* being used as indicators. Positive outcomes, such as those referring to level of *mindfulness*, *empowerment*, *commitment* and *resilience* are also assessed, but less frequently. This raises the question of which is more effective for evaluating well-being: the absence of negative outcomes or the presence of positive outcomes. As Karademas et al [53] state it is more reasonable to think of well-being as a parallel construct of negative and positive outcomes rather than as a continuum.

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With regard to the mechanisms of action that are proposed to explain the results of interventions, many of the studies use multi-component programs without adequate controls that would allow researchers to determine which mechanisms of action are actually working. The clearest case of this relates to the methods used to apply the interventions, which mostly involve group work. In many studies, the participants share experiences and problems, discuss work issues, seek solutions together and, ultimately, give each other support. However, variables such as socialization of beliefs, norms and values, as well as bonding and social support are not explicitly controlled and assessed as part of the intervention.

Although most of the works include some specific theoretical background about the interventions, the focus of them is mainly pragmatic, and is not aimed at verification or theoretical construction which makes the reproducibility of the intervention and the assessment of its effectiveness difficult. The results reveal a certain bias in how individual motivation is treated in the interventions. Mostly, the impact on work-related results is evaluated and, to a lesser extent, on other dimensions such as relationships with others or orientation towards patients. But there is also a need to investigate personal reasons for participating in the interventions, since different motivations may lead to differential results of the treatments applied [51].

It was observed that some studies did not use validated scales in their entirety, probably due to their excessive length. New tools may be necessary to measure well-being, or lack of it, as well as briefer and easier-to-apply designs that improve levels of adherence to treatment. Most of the interventions focused on strategies aimed at reducing stress, and produced results that imply an improvement after the intervention. However, the sample sizes and selection criteria do not allow the results to be extrapolated.

More studies on the subject are needed to provide more precise definitions of the determinants of well-being at work; the interventions aimed at improving it and their mechanisms of action; the appropriate indicators and scales to measure them; and the motivations PCPs workers have to participate.

LIMITATIONS

We have excluded studies carried out before 2000, because the literature on well-being at work in medicine is a more current research trend and, moreover, medical practice has changed substantially in the last two decades. Voluntary participation and self-reported measurements may cause bias, considering that different health systems and cultural differences among participants make comparisons difficult.

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CONCLUSION

Despite the growing interest in improving well-being among PCPs at work, the available clinical evidence on the interventions carried out does still not allow us to provide an accurate assessment of which are the outcomes that are best indicators of well-being or what role plays the individual motivation in the results of the interventions. More research, and more controlled studies, are needed to determine the specific mechanisms of action of the different interventions, as well as the motivations of the participants.

OTHER INFORMATION

Contributorship statement: AF and EV conceptualised and designed the review. AF and EV reviewed titles, abstracts and full-text papers for eligibility. Authors resolved disagreement by discussion. AF was responsible for extracting data and all data extraction was verified by EV. AF and EV independently assessed the methodological quality of each study. AF and EV prepared, reviewed and edited the manuscript.

Competing interest: The authors declare that they have no competing interests.

Funding/Support: The authors received no financial support for the research, authorship and/or publication of this article. The authors received financial support from the university for translation purposes.

Data Sharing statement: Data sharing not applicable as no datasets generated and/or analysed for this study. All data relevant to the study are included in the article or uploaded as online supplemental information. All data underlying the results are available as part of the article and no additional source data are required.

Ethic Statements:

Patient consent for publication: not required.

Ethics approval: no ethical approval was needed because we used data from previous published studies.

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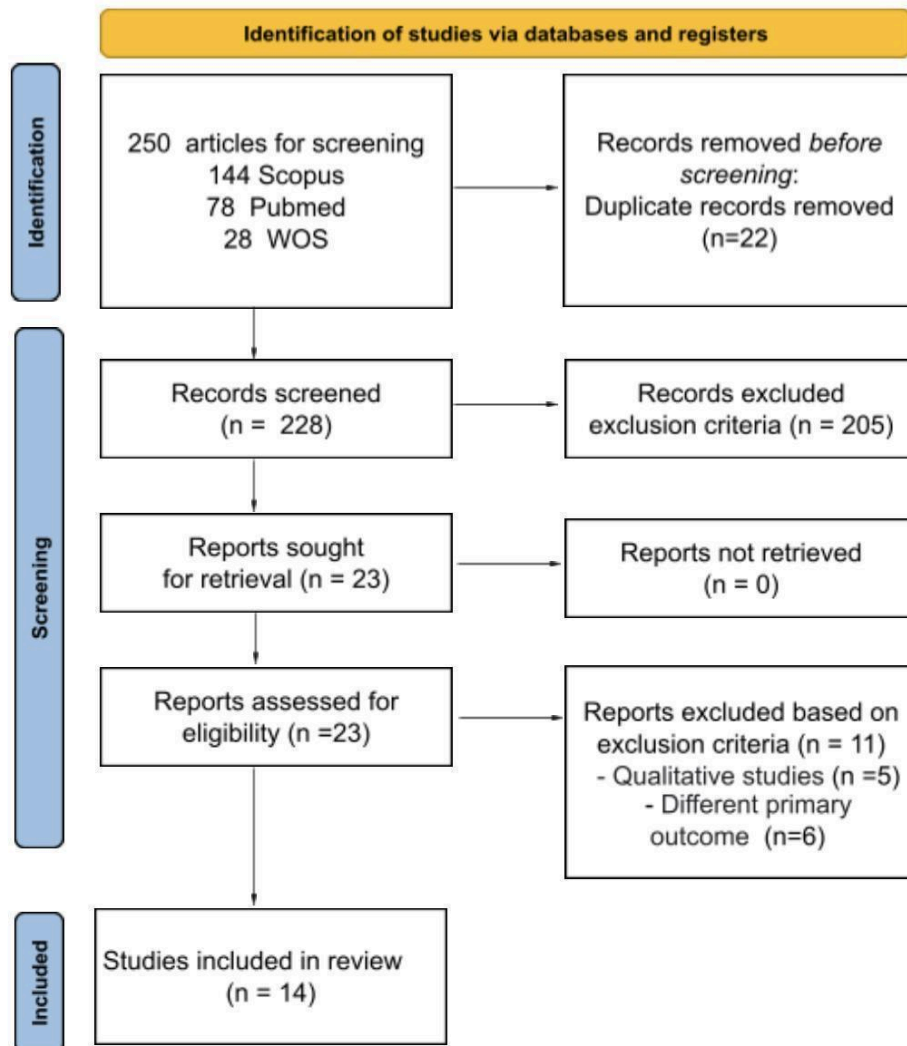
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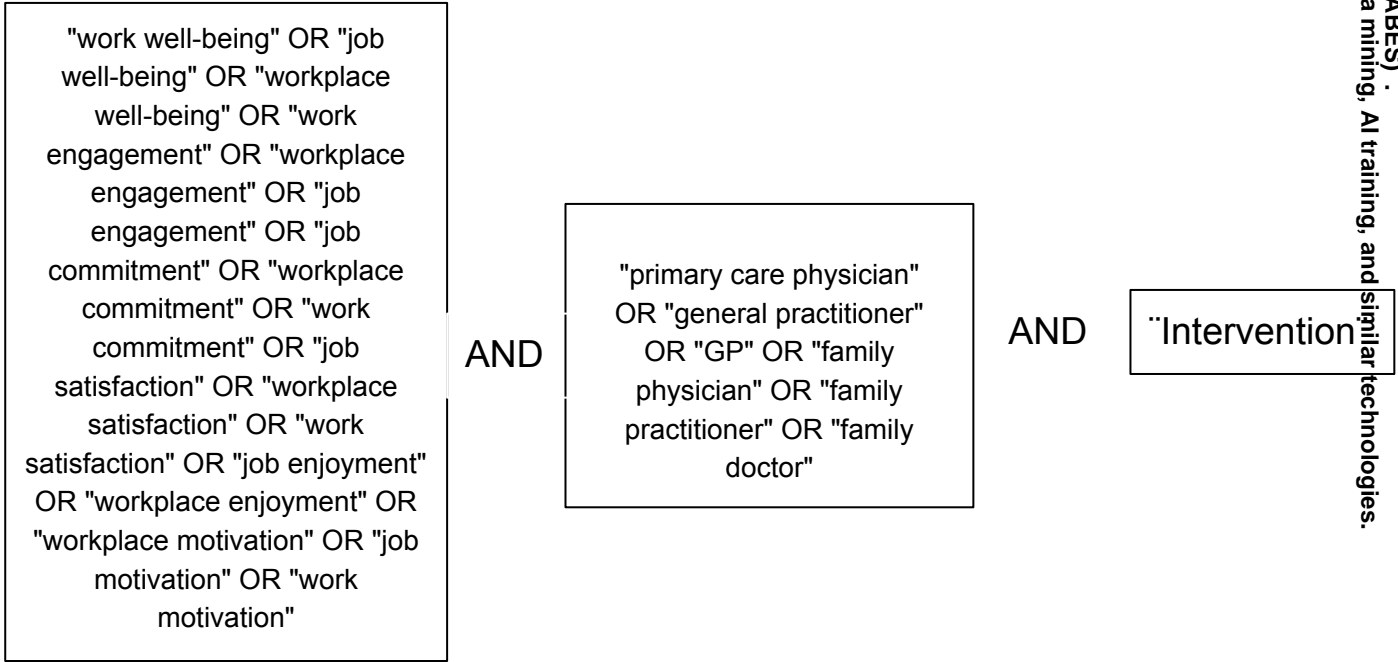
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PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	5
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	5
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	5
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	5
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	5
Data items	10 a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	5
	10 b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	5

Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	NA
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study/intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	8
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	8
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software packages used.	6
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting bias).	7
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	7



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	6
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	6

Study characteristics	17	Cite each included study and present its characteristics.	7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	7
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) a effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	7
Results of syntheses	20 a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	7
	20 b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	NA
	20 c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20 d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23 a	Provide a general interpretation of the results in the context of other evidence.	14
	23 b	Discuss any limitations of the evidence included in the review.	15
	23 c	Discuss any limitations of the review processes used.	15
	23 d	Discuss implications of the results for practice, policy, and future research.	15
OTHER INFORMATION			
Registration and protocol	24 a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	NA
	24 b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	NA

	24 c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	15
Competing interests	26	Declare any competing interests of review authors.	16
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	NA

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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