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The link between happiness and health: a review of concepts, pathways and strategies for enhancing well-being

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Summary **Background.** Recent years have seen a significant body of research independently associating the presence of happiness and well-being with a lower risk of mortality and with an improved physical and mental health status, which presents a relevant impact on public health. Nonetheless, there are still gaps in literature, and the underlying mechanisms are still unclear.
Objectives. This paper reviews literature regarding the main concepts and measurements associated with well-being, discussing pathways that link happiness to health and compiling strategies to improve it.
Material and methods. A narrative literature review was performed gathering the most relevant articles concerning concepts, definitions and measurements associated with well-being, as well as regarding pathways and mechanisms that link happiness to health. The concepts and definitions associated with happiness and well-being are discussed, and common constructs related to the latter are then considered. Additionally, the available methods to measure happiness and well-being, and their limitations, are analysed.
Results. The main pathways that link mental to physical well-being include: 1) neurobiological processes, 2) the indirect impact on health behaviours, 3) the promotion of protective psychosocial resources and 4) stress buffering effects.
Conclusions. Happiness and well-being play a major role on human's health, and many features and dimensions may be involved in this relationship. Public health measures should focus on upstream determinants of health and well-being, but more research is needed in order to fill in some gaps, such as the variety of available instruments to address, evaluate and promote efficient intervention.
Key words: health status, happiness, psychological well-being, illness behaviour.

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Background

Over the last few years, considerable scientific work addressing the effects of happiness and well-being on health has been developed [1–3]. A longitudinal study, accounting for 719 671 women in the UK, found no robust evidence of the direct impact of happiness on mortality, as its effects were fully mediated by self-rated health [4]. These results have been further replicated and extended to both American men and women [5].

Nevertheless, another study revealed subjective well-being as being independently related to: improved health, reduced prevalence of chronic health conditions and lower risk of mortality, whereas the negative effect is correlated with a higher risk of mortality [6]. Additionally, a meta-analysis found that positive psychological well-being is independently associated with a 19% and 29% risk reduction (hazard ratio; HR) for all-cause and cardiovascular mortality in healthy populations, respectively, as well as with a 23% and 24% decrease in HR mortality in patients with renal failure and with HIV, respectively [7]. Even in cancer, despite some controversy still remaining, positive psychological well-being may be correlated with a reduced risk of mortality [7–9]. Individuals with lower life satisfaction also have a three times higher likelihood of being hospitalised for their chronic conditions [10]. Moreover, regarding mental health, evidence suggests that individuals with slightly impaired or with low psychological well-being are up to seven times more likely to become depressed [11]. Flourishing or, at least, moderate levels of well-being are predictive and protective factors for all upcoming mental health outcomes [12], whilst mentally ill individuals who gain or maintain moderate to high levels of positive mental health present greater odds of recovering from their illness [13]. Nonetheless, there are still significant gaps in literature [14].

This work aims at summarising the current state-of-art by reviewing the main concepts, definitions and measurements associated with well-being, by discussing some of the pathways and mechanisms that link happiness to health and by comprehensively compiling strategies to improve populations' happiness and well-being.

Material and methods

Searches were performed in MEDLINE and CENTRAL for papers concerning concepts, definitions and measurements associated with well-being. In addition, papers addressing pathways and mechanisms that link happiness to health were searched and included. A combination of the MeSH terms "Psychological Well-Being" with "Happiness" was used in the queries, from inception until 2022.

Happiness and well-being

Concepts and definitions

Happiness is a broad term, often used colloquially, that may comprise different meanings. Therefore, it is usually not a scientific term of choice [15, 16]. However, using a comprehensive approach, happiness can be defined as "*a desirable mental experience*" [17], i.e. a non-permanent condition or circumstance which is a valued, pursed and a desirable feeling that may include emotions, beliefs and dispositions. Accordingly, well-being can be broadly "*defined as including all the manifold ways in which human beings can be, do and live well*" [17]. Table 1 summarises some of the most common concepts related to happiness and well-being.

Historically, the study of well-being has been dominated by two distinct yet complementary perspectives: hedonism and eudaimonism [18]. Nonetheless, this dichotomy may be impractical, as these two elements are part of a wider central construct of well-being [19].

Thus, well-being can be conceptualised as a complex system that results from the interaction between the individual and one's community, environment and socio-economic context, as was reported by Mead, Fisher and Kemp, who postulated it as a *"positive psychological experience promoted by connections to self, community and environment, supported by healthy vagal function, all of which are impacted by socio-contextual factors that lie beyond the control of the individual"* [20].

Consequently, reflecting upon the former definition and the bidirectional connection between health and well-being, a new life-course framework has been created – the *"GENIAL model (Genomics – Environment – vagus Nerve – social Interaction – Allostatic regulation – Longevity)"* [1], which delivers a theoretical context and insight into the main elements that determine the pathways to health and well-being [1, 21]. Recently, improvements on this model have also highlighted the individual, community and environmental contributors to well-being (Figure 1) [21]. However, considering the relevance of the GENIAL framework, the pathways that lead to well-being may lead to health and vice-versa.

Table 1. Concepts and definitions related to happiness and well-being

Concept	Definition
Flourishing	"*Optimal range of human functioning*" [47], which includes "*both feeling good and doing good*" [47]. It comprises: "*happiness and life satisfaction*", "*meaning and purpose*", "*character and virtue*", "*close social relationships*" and mental and physical health [3].
Happiness	*"A desirable mental experience"* [17]. It incorporates "*positive feelings at the moment, long-term life satisfaction, all forms of well-being*" and the "*causes of subjective well-being*" [16].
Well-being	Generic term that encompasses how individuals are performing in life [16].
Hedonic well-being	Maximisation of pleasure and attainment of goals and cherished outcomes, in detriment of negative and unpleasant feelings or experiences of pain or displeasure. It is usually operationalised through subjective well-being [2, 18, 19].
Subjective well-being (SWB)	It comprises the *"subjective evaluations of one's life, including both cognitive and affective feelings"* [16]. It is a subtype of well-being that reflects how someone evaluates one's life from one's own perspective. It includes balanced affective feelings and life satisfaction [16, 18].
Positive affect	General positive emotions that can persist for long periods and characterise an individual's disposition (trait) or may be brief emotions lasting minutes to days (state) [75].
Negative affect	*"Negative, unpleasant and undesirable emotional feelings and moods"* [16].
Affect balance	Predominance of positive over negative effects [16].
Life satisfaction	An individual's *"explicit and conscious evaluations"* of one's own life [16].
Eudaimonic well-being	The fulfilment of *"one's true potential"* [23]. It is related to a sense of *"meaning and purpose in life"* [2].
Psychological well-being	Reflects the full functioning of a person [18]. It includes: *"autonomy, personal growth, self-acceptance, life purpose, mastery and positive relatedness"* [18]. It may also be used as an alternate expression for mental health [24].
Mental well-being	The thoughts and feelings that one has of one's own life and one's experience of happiness. It includes the *"psychological, cognitive and emotional quality of a person's life"* [24].
Physical well-being	*"Quality and performance of bodily functioning"* [24]. It involves *"having the energy to live well, the capacity to sense the external environment"* and *"experiences of pain and comfort"* [24].
Social well-being	*"How well an individual is connected to others in their local and wider social community"* [24].
Spiritual well-being	Feeling of connection to *"something greater than oneself"* [24].
Personal circumstances	External conditions, including socio-economic and environmental factors [24].
Quality of life	Refers to an individual's *"overall circumstances"* (*"environmental, social, societal, material", among others*) that affect how positive and desirable one's life is [16].

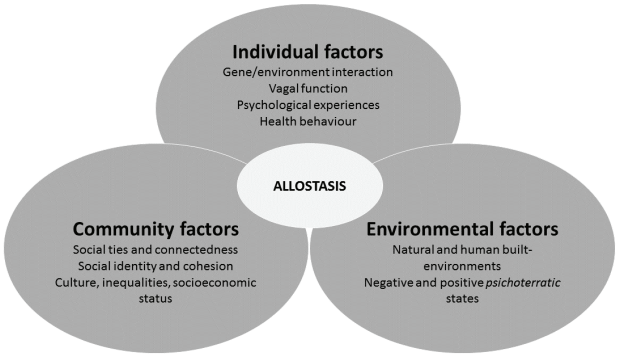

Figure 1. GENIAL Model 2.0. Original reproduction, adapted from [21]

Measurements and scales

Eudaimonic well-being is associated with a wide conceptual diversity; however, there is still little consensus as to what instruments should be used [22]. Nonetheless, phenomenological methods, such as open-ended interviews, ethnographic approaches or autobiographical techniques, may prove to be useful instruments [23]; however, more research on eudaimonic indicators is needed [22]. In contrast, both affective and cognitive components of hedonic well-being (Table 1) are usually assessed through surveys of self-rated reports [22].

There are numerous self-report measures of well-being, out of which 99 were analysed in the cited article [24]; thus, to choose an appropriate instrument, some precautions must be taken. First, its selection must be guided by the underlying conceptual framework of well-being [14, 22]. However, existing theories are both contradictory and overlapping (Table 2) [25]. Additionally, it is important to consider its time frame, as this considers its influence on behaviours, physiology and social relationships over time (the evaluation of state affection is useful for assessing factors related to one specific moment, whereas trait affection could be the best choice to evaluate distant outcomes, such as health related outcomes in the far future) [14]. Furthermore, most instruments include several dimensions of well-being (Table 1). Despite the wide variety of measurements, the most appropriate also depends on the dimension of interest [24].

Nonetheless, the use of non-self-report measurements should be considered, as these still present some limitations – failures in recall, biases or variations in response patterns [2, 14]. Some examples of non-self-report measurements include: day reconstruction method, recall of life events, smile intensity, patterns of online behaviours and ecological momentary assessments [14–16]. However, these instruments may be ineffective markers of the underlying well-being construct and are also more laborious and difficult to scale [15, 16].

However, most instruments do not emphasise the objective socio-economic and cultural factors related to well-being, such as the ability to satisfy basic needs, adequacy of financial income, educational level or the family system [22, 26].

Thus, there is no universally accepted measure for these constructs, which results from the lack of a consensual definition, the inexistence of agreed criteria to what an instrument should comprise, as well as the scattering of instruments across different disciplines [24, 25]. Hence, more research is still needed.

Theoretical foundations

It is clear that a dysregulation of allostasis ultimately leads to ill-health [1, 27, 28]. However, the mechanisms by which health and longevity are attained are far less understood. Several pathways linking happiness to health have been proposed. Mental well-being may lead to physical well-being via four routes: through its impact upon neurobiological mechanisms, through health behaviours and lifestyles, by supporting health protective psychosocial resources and through a stress buffering effect [2, 14, 29].

Neurobiological processes

Evidence suggests that happiness and well-being have a neurobiological basis, and several brain regions involved in the ability to integrate personally meaningful internal and external information appear to be implicated [30].

Complementing this link between the body and the mind, the vagus nerve (Figure 2) regulates downstream pathways, supporting quick physiological reactions to environmental changes and facilitating engagement with others [1]. Its activation triggers the release of acetylcholine in synaptic junctions amongst a vast variety of biological tissues [1, 20, 21, 31]. A healthy vagal function is associated with positive emotions and their regulation, to resilience and positive health behaviours [1, 20, 21], as well as *"connection to self, others and nature"* [20].

Vagal function regulates allostasis via three routes: regulation of prefrontal-vagal pathways, which enable the response to environmental changes; containment of the SNS (Sympathetic Nervous System), leading to the stabilisation of physiological arousal; and through the cholinergic anti-inflammatory reflex, which is responsible for the detection, regulation and control of the immune function and proinflammatory responses [1, 32, 33].

Vagal tone can be enhanced through continuous improvements in one's emotions and social experiences [34], being influenced by genetic and environmental factors, and social bonds and emotions may signal a *"self-sustaining upward-spiral dynamic"* [1]. Neuropeptides related with social bonding, e.g. oxytocin, dopamine and β-endorphin, may lead to individual distinctions in vagal function, which ultimately induce individuals to engage and maintain social connections [1].

In turn, the aforementioned mechanisms ultimately influence processes at a molecular level, and there is an increasing amount of research linking these to happiness and health [2, 14].

Table 2. Main conceptual frameworks and theories of subjective well-being [25]

Conceptual framework	Description	Observations
Fulfilment and engagement theories	Aim at describing *"the influences of goals, needs and activities on SWB"*.	There is no clear definition of *"universal needs and goals"*, and there is *"a lack of a systematic formulation"* of these theories.
Personal orientation theories	Explain the *"influence of temperament on SWB"*.	There is *"little agreement on what aspects of personality should be tested*". These theories do not consider the effect of the environment on personality.
Evaluative theories	Explore the cognitive component of SWB and how it is related to *"the process of fulfilment and emotions"*.	The standards of comparison are not fully understood. These theories may also be influenced by personal orientation and by a *"tendency to compare upwards or downwards".*
Emotion theories	Explore the affective component of SWB.	Does not consider the impact of personality on the influence of emotions on subjective well-being.

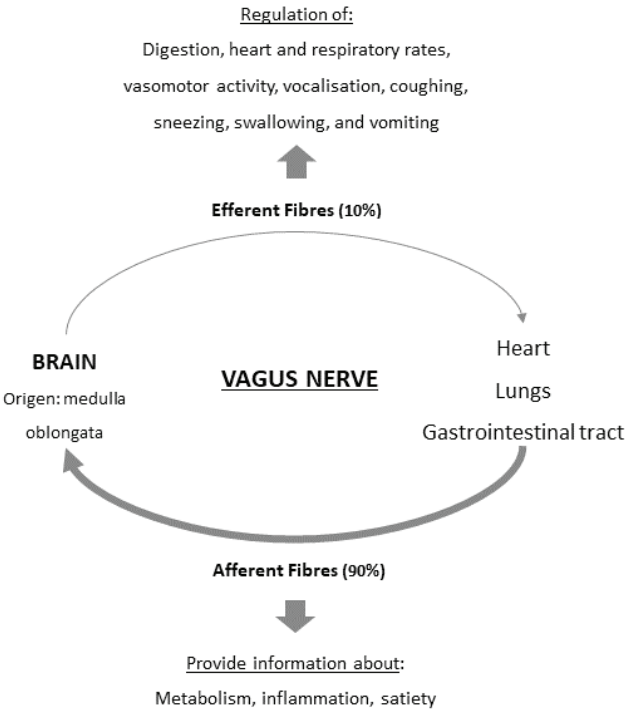

Figure 2. Basic functions of the vagus nerve. Original reproduction, adapted from [31]

Inflammation has been implicated in the aetiology of numerous illnesses [35], including the onset and progression of arthritis [36]. However, increases in well-being, over time, have been correlated with a decline in inflammatory markers, for instance: CRP (C-Reactive Protein), white blood cell count and fibrinogen, independently of mental ill-health [37]. In this sense, higher levels of well-being are correlated with a reduced risk of developing arthritis, and CRP accounts for 12% of the risk association [36].

On the other hand, sphingolipids (signalling molecules that regulate several cellular functions and metabolic pathways) are also implicated in inflammation and apoptosis [38, 39]. In particular, ceramides, which regulate aging and cellular senescence, are associated with multiple disorders, including: cardiovascular disorders, obesity, diabetes, cancer, Alzheimer's disease and depression [38, 39]. A recent study reported that greater well-being is correlated with reduced serum concentrations of sphingolipids, and that persistent high levels of eudaimonic well-being are predictive of lower concentration of ceramides [38]. Thus, these molecules may represent a biological intermediary between well-being and health [38].

Alternatively, higher levels of positive affection are correlated with reduced allostatic load, resulting in improved levels of CRP, systolic and diastolic blood pressure, heart rate, total cholesterol, triglycerides, low- and high-density lipids, albumin, glucose, HbA_{1c} and waist circumference, even after adjusting for negative affection, age and gender [40]. However, the combination of central obesity, hypertension, lipid dysregulation and insulin resistance constitutes a metabolic syndrome [41], which is associated with an increased risk of cardiovascular diseases and diabetes [42]. Nonetheless, hedonic and eudaimonic well-being are predictors of a lower risk for this syndrome, and, even though well-being accounts for only 1–2% of the variance, its similar magnitude to other well-known risk factors, such as age and educational level, is noteworthy [42].

Likewise, other factors that are involved in cardiovascular pathogenesis include intima media thickness of the carotid arteries (to which psychological well-being has been independently and inversely correlated) [43], as well as aortic stiffness (higher levels of eudaimonic well-being have been associated with a reduced long-term risk of arterial stiffness in older men) [44].

All things considered, the neurobiological pathways to health include some of the most compelling and coherent evidence of the impact of happiness and well-being on health [14]. Nonetheless, considering the cross-sectional nature of some of the studies presented, causal links may not be established, and thus, more research is still needed.

Psychosocial resources, stress buffering effects and health behaviours

Emotions are a vital component of individual well-being and represent a learned propensity to react consistently to a given object [45, 46]. They can encompass both a transitory state, as well as a tendency to experience a certain emotion [45].

While negative emotions tend to narrow one's response, positive emotions are believed to broaden one's range of thought and action tendencies, thereby building enduring physical, mental and social resources – the *broaden and build theory* [45–47]. These personal resources, in turn, outlast the emotions that led to their acquisition and can be used later on to manage future threats in different emotional states [45–47]. Additionally, positive emotions can undo or reduce the deleterious consequences of negative emotions – the *undoing hypothesis* [14, 46] – thereby reducing stress levels and the likelihood of experiencing it, accelerating its recovery and weakening its relationship with health-related behaviours, thus buffering stress's harmful effects [14, 45, 48].

Nonetheless, too much positive emotions are not necessarily good, and thus, high levels of positive emotions may lead to impaired memory, judgments and interpersonal strategies [49]. Hence, mental health and well-being come from the balance between negative and positive emotions – the so-called *emotion regulation* [45, 50] – built through personal experience and socialisation over time, which can vary from adaptive to less adaptive skills [45, 49, 51]. Consequently, the use of adaptive strategies, namely positive reappraisal, is associated with enhanced mental well-being but also with the downregulation of negative responsivity, leading to more adaptable patterns of cardiovascular and neuroendocrine responses to stressful events [49, 51, 52].

Moving on to health behaviours, these represent another major pathway linking happiness and well-being to health. Smoking, physical inactivity and an unhealthy diet, to name but a few, represent major risk factors for non-communicable diseases (NCDs) [53].

Well-being is partially determined by the social context and, therefore, influenced by opportunities for shared behaviours and health-related choices [45]. Individuals with a greater feeling of purpose and engagement in life, and with more quality connections with others, are more likely to also adopt and maintain healthy behaviours [23].

Engagement in physical activity improves physiological functioning and brings numerous health benefits; simultaneously, greater well-being has been coupled with a heightened likelihood of individuals to become more physically active [54]. Furthermore, positive emotions and well-being are also associated with a lower risk of smoking, a higher probability of having good sleep hygiene and consuming a healthy diet [14, 29, 45]. Hence, behaviour change implies a great opportunity for health-promoting interventions [45].

All things considered, emotions, fundamental drivers of behaviours, as well as emotion regulation skills, social relationships and support are core dimensions of happiness and well-being, which, in turn, are ultimately determined by the interaction between the individual and one's environment [14, 21].

How to enhance happiness and its effects

Happiness and well-being have been historically seen as a generally stable trait, with only slight fluctuations throughout

the day [55]. However, though this trait has a substantial genetic and heritable component, at least 60% of its variability is influenced by lifestyle and environmental factors [15, 56, 57]. Similarly, evidence suggests that the neurobiological circuits related to happiness and well-being present a developmental basis, in such a way that the associated brain regions continue to develop well after puberty and beyond [55]. This characteristic, in turn, allows for enriching lifestyle activities to *"enhance the connectivity or density of neural networks"* [55], thereby altering one's average levels of happiness and well-being [55]. Consequently, these positively associated interventions, generally used to enhance happiness and well-being, can be broadly subdivided into individual- and population-based strategies [45].

Individual-based strategies

The most common individual-based interventions used to enhance happiness and well-being comprise mindfulness-based programmes and positive psychological interventions (PPIs) [29].

Mindfulness, a conscious non-judgmental awareness to the present moment, has gained significant attention over recent years, and it promotes increased attentional control and decreased reactivity, allowing people to focus their attention on behaviours that align with oneself [58, 59]. Many techniques have been developed, such as mindfulness-based cognitive therapy, muscle relaxation and loving kindness meditation [29, 58]. The observed changes in well-being appear to result from modifications in the morphometry of the grey matter among several brain regions that are involved in the synthesis of neurotransmitters and are also responsible for the modulation of sleep, appetite and mood-arousal [60].

The other main tool used in this context, PPIs, encompasses all the interventions that aim at enhancing positive constructs while decreasing depressive symptoms. Some of these include practicing kindness, gratitude and optimism, savouring positive events and improving personal strengths [2, 14, 29, 58]. These strategies are feasible and easy to deliver, generally well accepted and do not require extensive provider training [29]. However, PPIs do not usually focus on maladaptive behaviours and thoughts, and so we must consider the effects of other interventions that target those attitudes, such as the combination of multiple PPIs, cognitive therapy, cognitive behavioural therapy or acceptance and commitment therapy [61].

A recent systematic review and meta-analysis of 393 studies (n = 53288) [61] concluded that the interventions which presented a greater influence on well-being were: mindfulness-based interventions, PPIs and multi-component PPIs, albeit with only small to moderate effects. Additionally, higher intensity interventions were usually accompanied by greater effect sizes but only on healthier individuals. This meta-analysis also identified that cognitive therapy and cognitive-behavioural therapy have a significant small-to-moderate impact on improving the well-being of mentally ill populations, particularly with higher intensity and group-based interventions [61].

In the context of physically ill populations, other studies have revealed some evidence about the efficacy of well-being interventions at decreasing depressive and anxiety symptoms and improving health behaviours and clinical outcomes (namely for diabetes and other cardiovascular disorders) [62, 63].

Overall, mindfulness-based interventions and PPIs are beneficial for both clinical and non-clinical populations. However, more studies are needed to identify which specific PPIs should be integrated in multi-component interventions. Moreover, acceptance and commitment therapy and cognitive behavioural therapy may also have an important role to play at improving happiness and reducing the burden imposed by mental illnesses [61].

In this sense, physician appointments present as excellent opportunities to assess and promote patients' well-being [29, 62]. Even though the promotion of happiness and well-being goes in line with the family medicine philosophy, it is not yet fully incorporated in everyday practice [64]. To overcome this, a brief and structured interview, with a small number of targeted questions, could be implemented to achieve a patient-centred approach, to identify the patient's sources and resources of well-being, to provide information about the benefits of happiness and to indicate other resources and available activities [29]. This type of structured approach focuses on enhancing an individual's strengths while engaging and rewarding patients. Additionally, through specific statements related to the personal circumstances of the individual, clinicians can give customised recommendations, representing a powerful tool (Table 3) [29, 62]. These interventions can then be further explored by other caregivers, such as psychologists and psychiatrists [29, 62].

It is also important to consider other interventions that target the promotion of well-being, such as practicing physical activity, having a healthy diet and good sleep hygiene, to name but a few [21]. As already discussed, happiness and well-being are both dependent and affected by behaviours. Hence, programmes pointing at improving well-being may be complemented by other existing interventions that aim at supporting a healthy lifestyle, thus representing a pertinent strategy to enhance, simultaneously, both mental and physical well-being [21, 29].

Nonetheless, despite its promising results, more research is still needed to optimise individual interventions [45, 61]. Consequently, it is of utmost importance to shift our attention to the upstream determinants of health and well-being and to focus on larger system-level interventions [14, 45].

Population-based strategies

Psychosocial interventions are a systematic effort to modify the social and psychological factors known to have an impact on

Table 3. Example of a stepwise structured interview [29]

Steps	Description
Step 1	Brief assessment of psychological distress symptoms (e.g. anxiety, depression). Outline well-being as a critical element for health.
Step 2	Assess psychological well-being through specific questions focused on the patient's personal strengths, optimism and gratitude, positive affection, life satisfaction and purpose and social support. Some examples include: *"What are your greatest strengths and skills, and how have you applied them to improve your health?"; "Do you expect that good things will happen for you in the future?"; "What, if anything, do you have to feel grateful for in your life?"; "How often do you experience pleasure or happiness in your life?"; "Are you satisfied with how your life has gone and how you have lived it?"* [29]. Based upon the individual's circumstances, offer statements that support well-being.
Step 3	Give customised recommendations and suggestions of specific structured activities, e.g. prescription of gratitude exercises, sharing good news, meditation programmes [29, 64]. Provide *"information about community programs and resources that promote" "well-being and/or increase social support"* (e.g. community centres, support groups, hobbies, volunteering).

Table 4. Policies to greater happiness for a greater number of citizens: results from a Delphi Study [66]	
Approach	**Specific strategies**
Investment in happiness research	Understand what is best suited for whom. Monitor happiness in nations over time. Assess how much of the things regarded as beneficial for happiness are ideal.
Investment in good governance	Maintain institutional excellence (in the country and in civil services). Empower and engage the people.
Work	Improve working conditions. Reduce unemployment.
Support of vulnerable people	Focus on the least happy. Diminish loneliness. Fight discrimination. Provide minimum income security. Support families.
Strengthen social bonds	Promote voluntary work. Raise support for non-profit organisations. Support local fairs and festivals.
Investment in health care	Free health care. Prioritise prevention. Encourage healthy lifestyles. Invest in mental health.
Investment in education	Foster freedom of choice. Introduce life aptitudes into school curriculums.

health and health-related behaviours and occur in a multilevel manner that encompasses: the family, social network, workplace, community and the population level [45].

The *Health-In-All-Policies* strategy, which incorporates health as a central outcome in all social departments, allows for a collaborative approach across different sectors, thereby maximising health policies and enhancing the population's health more efficiently [57].

In this sense, to incorporate happiness and well-being as national initiatives, it is crucial to tackle some key components [65]. First, it is necessary to monitor the levels of happiness and well-being across the nation and to identify its determinants. It is essential to build partnerships with diverse community stakeholders in all sectors, to study a community's strengths and needs and to disseminate existing initiatives [57, 65]. It is important to adjust, execute and evaluate scalable evidence-based interventions in varied and multi-level settings, to involve the public through effective and efficient communication regarding happiness and well-being and, lastly, to identify and address the disparities in the pertaining topics [65].

Conversely, there are some cost-effective, one-size-fits-all policy recommendations that a Delphi study revealed (Table 4) to yield greater happiness (as overall life satisfaction) to a greater number of citizens and which presented higher effectiveness and feasibility average ratings [66].

Final remarks

Worldwide, the COVID-19 outbreak led to a massive impact on the prevalence and burden imposed by mental illnesses, either by increasing depressive and anxiety disorders among the general population [67], as well as by affecting physical health, ultimately leading to the exacerbation of healthcare services' vulnerabilities [68].

Nonetheless, it is clear that the focus on health promotion is, in the long run, one of the most cost-effective health strategies [53]. Consequently, given that the happiness and health of the population is far from being the best [56, 69], it is important to consider these in an integrated approach and to incorporate the enhancement of happiness and well-being as a worldwide goal [56, 70]. For that, the social and environmental determinants of health must be addressed, especially during sensitive developmental periods [71, 72].

Alternatively, digital mental health also presents as a highly flexible, adaptable, scalable and low delivery cost opportunity to provide individual-based strategies [70, 73], and it offers not only a solution to diminish the impacts of the COVID-19 pandemic but also to broadly promote health and well-being [70, 74].

On the other hand, this field of research still presents some limitations. Firstly, the distinction between health and well-being is unclear, and so, many measurements of well-being are parallel to multidimensional measures of health. Therefore, it is necessary to create a firm separation between these constructs. Furthermore, due to the inability to establish an agreed upon and fully operational definition of happiness and well-being, these concepts may be used as more generic and comprehensive terms, reflecting multiple dimensions [12, 24]. Moreover, it is also important to consider that striving for happiness is not free from harm and that it may lead to feelings of guilt or failure if the desired outcome is not achieved [2].

Even though the exact mechanisms that link happiness and well-being to health are not yet fully uncovered, and even considering some publication bias, preliminary research on the topic is well funded, replicated and extended [7, 14].

Ethical and funding considerations

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