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The effects of positive psychology interventions in Arab countries: a protocol for a systematic review

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Abstract

Introduction Despite the growing volume of published studies on the effects of Positive Psychology Interventions (PPIs), little is known about their effectiveness outside of Western countries, particularly in Arab countries. The effectiveness of PPIs in this region remains unclear, as a systematic review focusing on this area of research is yet to be published. Here, we present a protocol for the first systematic review that aims to examine the effects of PPIs on increasing well-being, quality of life and resilience and decreasing depression, anxiety and stress for both health and clinical, child and adult populations in Arab countries.

Methods and analysis This protocol is carried out in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) guidelines. A systematic literature search for studies up to 30 April 2021 will be conducted in the following electronic databases: PsycINFO, PubMed, Scopus, ProQuest, Dar Al Mandumah and Almanhal. Experimental/quasi-experimental quantitative studies about the effects of PPIs on healthy and clinical participants of all ages in the 22 Arab countries will be included. Outcomes will include psychological effects of PPIs on dimensions related to well-being (e.g. happiness), quality of life, resilience, depression, anxiety and stress. The risk of bias will be evaluated using the Cochrane risk-of-bias tool. A narrative synthesis with tables of study characteristics will be provided. A meta-analysis will be included if outcomes allow; in this instance, subgroups analysis will be conducted, depending on the data gathered, to examine differences in effect sizes based on age group, population type, duration of intervention, and type of intervention.

Ethics and dissemination Ethical approval is not required for the performance of this systematic review. We intend to publish the study in a peer-reviewed journal and share the findings at conferences.

PROSPERO Registration number CRD42020198092

Strengths and limitations of this study

- This will be the first systematic review to provide an evidence-based review of the effects of PPIs for clinical and healthy populations in the Arab region.

- The main strength is the inclusion, in addition to the English databases, of the two largest Arabic databases.
- An extensive search strategy was developed in consultation with a review team as well as a library specialist for both searches concerning English and translated Arabic terms.
- A description of the intervention types, durations, delivery methods and population types will be provided, enabling investigation of their effectiveness.
- Since this review will be limited to only published English and Arabic studies, unpublished relevant studies will be missed.

Introduction

The Arab region accounts for around 5% of the world's population. As of 2019, this region was home to nearly 427 million inhabitants [1], with 60% being aged under 25 years. Arab countries have recorded the highest burden of mental health disorders globally [2]. In a call for action into mental health research in the Arab region published in the *Lancet*, researchers explained that stigma, reluctance to self-disclose and to seek formal help, conflict and war, were some of the reasons for such high levels of mental health disorders [3].

With the increasing population growth in the region, research directly studying positive mental health and well-being is needed. This research will in turn impact the world, especially with the increasing concern regarding mental health problems caused by the COVID-19 pandemic [4]. Several studies have examined the psychological impact of the ongoing pandemic and reported negative effects on mental health including anxiety, depression and stress [5-8]. These findings emphasize the need to support people during this time by delivering psychological interventions [4-7]. As Positive Psychology Interventions (PPIs) focus on cultivating psychological resilience and well-being as well as alleviating mental health problems [9-14], we believe the findings of this review are an important contribution to addressing of mental health problems resulting from the COVID-19 pandemic.

The past decade has witnessed a rise in research examining PPIs [15]. Sin and Lyubomirsky first defined PPIs as 'intervention, therapy, or activity primarily aimed at increasing positive feelings, positive behaviors, or positive cognitions' [9, p. 469]. Bolier *et al.* assert that

PPIs should be designed based on positive psychology theories [10]. Another definition was proposed by Parks and Biswas-Diener in which they emphasize that interventions must target 'positive' variables and have sufficient empirical evidence [16]. PPIs include, but are not restricted to, gratitude, compassion, strengths, optimism and kindness. While a variety of definitions have been suggested, we define PPIs as psychological interventions (training, therapy) aimed at enhancing positive feelings, behaviours, or cognitions, based on positive psychology theories and research.

Several meta-analyses have found that PPIs have a small to moderate significant effect on well-being and distress in both the general population [e.g.9,10,12] and patients with mental health problems [e.g.11]. These include meta-analyses that have examined single PPIs [e.g.9,10] and multi-component [e.g.12] PPIs. While studies on PPIs have been mainly examined in Western countries, dominated by western, educated, industrialised, rich, and democratic (WEIRD) populations [17], there is now some evidence for their effectiveness in non-Western countries [18]. In a separate systematic review of PPIs in non-Western countries, Hendriks *et al.* reported a moderate effect for well-being and a large effect for depression and anxiety [18]. This review was limited to peer-reviewed English articles published up until 2017. More recently, Carr *et al.* conducted a meta-analysis including studies published in any language in peer-reviewed journals or grey literature [19]. Reviewed 347 studies, including three studies from the Arab region, they reported a small to medium significant effect of PPIs on well-being and distress [19]. They concluded that those who benefitted most from multiple PPI were clinical samples from non-Western countries, who engaged in longer therapy programmes. However, they did not search Arabic databases (e.g. Dar Al Mandumah), where most Arabic studies can be found. The present review is designed to address this limitation.

The Arab world consists of 22 countries in the Middle East and North Africa: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates and Yemen. These countries share cultural traditions, histories and a common language. Researchers from the Middle East and North Africa have recently shown an increasing interest in positive psychology. A systematic review investigating the prevalence and characteristics of positive psychology research in the Middle East and North Africa region, published in 2013, was undertaken by Rao, Donaldson and Doiron [20]. Reviewing a total of 53 studies, they found that

positive psychology research in the region has grown exponentially since 2011. They also found that the region's literature focused on two paths: one path aimed at increasing positive states, while the other path aimed to coping with adversity. However, this review by Rao and colleagues did not examine the effects of PPIs [20]. The current review attempts to address this gap.

The positive psychology movement originated in the United States [21], which raises concerns about the practical generalisability of PPIs, due to cultural differences between Western 'individualistic' and Eastern 'collectivist' cultures [22,23]. Because of these differences, we believe it is important to undertake this review. Several studies across the Arab region have recently examined the effects of PPIs [24-29], with studies adapting these interventions to their particular cultures [25,30,31]. However, the effects of PPIs in the Arab region remain unclear as, to our knowledge, no systematic quantitative review has yet been published. It is timely and essential to provide the Arab populations with evidence on PPIs to develop a culturally responsive positive psychology [32], as well as an indigenous positive psychology [33].

Objectives

Primary objective

- To examine the effectiveness of PPIs on increasing well-being, quality of life and resilience and decreasing depression, anxiety and stress for both health and clinical, child, adolescent and adult populations in the Arab region.

Secondary objectives

- To identify types of PPIs that have been conducted in the Arab region.
- To determine if the interventions were adapted for the local context.
- To identify variables that may influence the effects of PPIs on outcomes.

Methods and analysis

This protocol was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-P) guidelines [34]. This review has been registered in the International Prospective Registry of Systematic Review – PROSPERO. In the event of protocol amendments, the date of each amendment will be recorded and reported in PROSPERO with a description of changes and its rationale.

Criteria for considering studies for this review

Types of studies

We will include empirical studies where individual participants (not groups) have been randomised, there is a control condition, and the researcher provided an effect size or enough information to allow us to calculate an effect size.

Non-experimental studies (correlational/relationships studies, descriptive studies) and qualitative studies will be excluded. We will include studies published in peer reviewed journals and dissertations.

Types of participants

Inclusion: Healthy and clinical participants of all ages in the Arab region. The Arab countries include Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen.

Exclusion: Participants from outside the Arab region. When a study includes Arab and non-Arab participants, the study is included if the results of the Arab participants are presented separately.

Patient and public involvement

No patient involved. Data will be collected from published articles.

Types of interventions

Inclusion: Studies will be eligible for inclusion if they investigated the delivery of intervention (training, therapy) aimed at enhancing positive feelings, positive behaviours or positive cognitions. We will include studies examining one intervention (single-component) or two or more interventions (multi-component). The intervention must be explicitly developed in line with the theoretical tradition of positive psychology. PPIs are defined by Sin and Lyubomirsky as 'treatment methods or intentional activities that aim to cultivate positive feelings, behaviours, or cognitions' (p. 467) [9]. PPIs include, but are not restricted to, self-compassion, gratitude, character strengths, mindfulness, optimism (e.g. best possible self), forgiveness, kindness, savouring and humour.

Exclusion: We will exclude studies reporting the effects of physical activity interventions. Studies examining traditional psychotherapeutic interventions (e.g. cognitive behavioural therapy) including a component of positive psychology will also be excluded.

Types of outcome measures

The outcomes of interest are well-being (e.g. happiness, life satisfaction), quality of life, resilience, depression, anxiety and stress. We will include only studies that reported changes in at least one of those psychological outcome measures, assessed pre-intervention and post-intervention and linked their findings to positive psychology literature.

Search method for identification of studies -

Electronic searches

For English-language literature, the databases that will be searched are:

- PsycINFO
- MEDLINE (via PubMed)
- Scopus
- ProQuest Dissertation and Thesis

For Arabic-language literature, the databases that will be searched are:

- Dar Al Mandumah
- Al Manhal

Limits will be applied to retrieve studies published in the English or Arabic language from 1998 – the inception of the positive psychology movement – to 30 April 2021. The searches will be re-run just before the final analyses, and new studies will be retrieved for inclusion. Manual searches of references will be conducted in relevant papers. We will also search PROSPERO and the Cochrane library for any systematic reviews planned or completed. A range of words and indexed terms related to 'positive psychology interventions' and 'Arab countries' will be searched. The strategies for searching databases will be modelled on the search strategy designed for PubMed (see supplementary file 1. Search Strategy Example). In order for us to develop equivalent search terms in Arabic, AB, the first author, who is a native Arabic speaker, will translate the English search terms in consultation with experts in the field.

Searching other resources

- Reference lists of recent meta-analyses [12,18,19] and a review from the Middle East and North Africa region [20] will be searched.
- We will contact experts in the field from the Arab region and ask them to provide sources that might still be missing.

- Hand searching of the Middle East Journal of Positive Psychology, as well as of the recent book called Positive Psychology in the Middle East/North Africa [35] will be carried out. Reference lists of all eligible studies will be hand-searched to attempt to identify additional relevant studies.

Study records

Data management and selection process

Search results, including citations, abstracts and full-text articles, will be uploaded and recorded to EndNote X9. We will remove duplicates and screen all titles and abstracts against the inclusion criteria. This will be done by AB and then a second reviewer will screen a random 10% of studies independently to ensure consistency. The kappa statistic will be calculated to quantify the interobserver agreement. Where titles and abstracts are deemed to be relevant or unclear, full-text articles will be retrieved and independently screened by two reviewers to identify studies for inclusion. Additional information will be obtained if required. In case of disagreement, a third reviewer will be involved. Studies that are noted as excluded will be recorded, and their reason for exclusion will be reported using a flow diagram following the PRISMA guidelines.

Data extraction process

A data extraction form will be developed and piloted to obtain outcome data from included studies. This will be done by AB, and another reviewer will check the extracted data. Discrepancies will be resolved by discussion. In case of disagreement, the final classification will be made by consensus with the involvement of a third reviewer. Extracted data will be recorded in an excel spreadsheet. Data extracted will include:

1. Country of origin, author(s), year of publication
2. Study method: design (e.g. experimental, quasi-experimental)
3. Sample: (e.g. number of participants, clinical or non-clinical, gender)
4. Type of intervention: single- vs multi-component
5. Delivery form
6. Session duration (number of sessions and duration of session period)
7. Control group
8. Number of participants at follow up

9. Mean/Standard Deviation, p-value, effect size

10. Retention rate (post)

11. Outcome measures, questionnaires used.

Dealing with missing data

In the case of missing data or insufficient information, we will attempt to contact the study authors. If the authors cannot be contacted, available data will be analysed as reported.

Assessment of risk of bias in included studies

We will use the Cochrane risk-of-bias tool, in accordance with the Cochrane handbook to assess the methodological quality of the included studies. This will be done by two reviewers independently. In the case of disagreements, a discussion will be conducted with a third reviewer to reach a consensus. In the case of insufficient or additional information, we will contact the study authors. The assessments will be classified into three levels: low risk, some concerns, and high risk.

Data synthesis

We will provide a narrative synthesis of all the included studies' findings, with tables of study characteristics, participants, intervention details, and outcome measures. Where possible, quantitative data will be pooled for a meta-analysis. Multilevel modelling will be conducted to synthesize multiple effect sizes from single studies.

Subgroup analysis

Depending on the data gathered, subgroups may be formed and outcomes explored according to age or clinical nature of samples. Subgroup analyses will be conducted to examine moderating effects of the following possible moderators. The moderators are:

1) age group: Child/ adolescent (up to 17 years old) or adult (18 years old and up);
2) study population: clinical or non-clinical;
3) type of intervention: single- component or multi-component;
4) duration of intervention: short (<8 weeks) or long (>8 weeks).

Ethics and dissemination

Ethical approval will not be required for the performance of this systematic review because we will collect data from existing sources. The results of this systematic review will be submitted to a peer-reviewed journal in the field of positive psychology. Furthermore, the findings of this review will be shared with professionals and practitioners at conferences.

Discussion

PPIs have the potential to improve mental health and promote well-being. However, much uncertainty still exists in examining the application of these interventions in the Arab region, as most studies have only focused on Western samples. This review will be the first study to systematically review the efficacy of PPIs in the Arab region. The findings of this review are expected to provide health/clinical populations of all ages in the Arab region with a detailed and evidence-based overview of the overall effects of PPIs that will enrich the field of positive psychology and mental health. In turn, this will contribute to evaluating these types of interventions and strengthen their generalisability by providing a multi-cultural perspective [33] for health professionals and practitioners in the field.

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Footnotes

Contributors: AB and ZDB conceptualised, designed and registered the protocol. AB and ZDB developed the search strategy with contributions from co-authors (MM, AS, MW, LL). AB will screen potential studies, extract data of included studies, assess the risk of bias, and complete data synthesis, along with a second independent reviewer (TS). Statistical analysis will be conducted by MM. All co-authors (AB, ZDB, MM, AS, MW, LL, TS) critically revised the protocol, provided feedback on the draft of the manuscript and approved the publishing of the protocol.

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Competing interests: None declared.

Ethics approval: Ethical approval was obtained from the School of Applied Psychology Ethics Committee, University College Cork (Ireland).

Data sharing statement: The results of the review will be disseminated through peer-reviewed publications.

Supplementary File 1. Search Strategy Example

Search strategy: PubMed

#1	"positive psych*"[tiab] OR "positive intervention"[tiab] OR positivity [tiab] OR "posttraumatic growth"[tiab] OR "personal growth"[tiab] OR optimism[tiab] OR hope [tiab] OR gratitude[tiab] OR blessing*[tiab] OR "three good things"[tiab] OR mindfulness[tiab] OR kindness[tiab] OR "best possible self"[tiab] OR "character strengths"[tiab] OR strengths[tiab] OR meaning*[tiab] OR humor[tiab] OR humour[tiab] OR savoring[tiab] OR savouring[tiab] OR forgiveness[tiab] OR compassion [tiab] OR empathy[tiab] OR engagement[tiab] OR altruism[tiab] OR reminiscence[tiab] OR "positive thinking"[tiab] OR "optimistic thinking"[tiab] OR "positive emotions"[tiab] OR "positive writing"[tiab] OR self-regulat*[tiab] OR empowerment[tiab] OR "growth mindset"[tiab] OR well-being[tiab] OR wellbeing[tiab] OR "well being"[tiab] OR happiness[tiab] OR happy[tiab] OR "life satisfaction"[tiab] OR "satisfaction with life"[tiab] OR resilience[tiab] OR hardiness[tiab] OR "relationship satisfaction"[tiab] OR "relationship quality"[tiab] OR thriving[tiab] OR flourishing[tiab] OR "job satisfaction"[tiab] OR morale[tiab]
#2	"Psychology, Positive" [MAJR] OR Positive Psychology[Mh] OR Well Being[Mh] OR Optimism[Mh] OR "Hope"[MAJR] OR "Mindfulness/methods"[MAJR] OR "Character"[MAJR] OR "Forgiveness"[MAJR] OR Compassion[Mh] OR "Work Engagement"[Mh] OR "Happiness"[MAJR] OR Happiness[Mh] OR "Resilience, Psychological"[Mh] OR Life Satisfaction[Mh]
#3	Program*[tiab] OR intervention*[tiab] OR therap*[tiab] OR treatment*[tiab] OR Training[tiab] OR Exercise[tiab]
#4	Therapy[Mh] OR Psychotherapy[Mh] OR Training[Mh] OR Exercise[Mh]
#5	effect*[tiab] OR effic*[tiab] OR outcome*[tiab] OR evaluat*[tiab]
#6	random*[tiab] OR RCT*[tiab] OR Trial*[tiab] OR non-random*[tiab] OR experiment*[tiab] OR quasi-experiment*[tiab] OR control*[tiab] OR condition [tiab]
#7	"Middle East"[tiab] OR "North Africa"[tiab] OR Arab*[tiab] OR Algeria[tiab] OR Algerian[tiab] OR Bahrain[tiab] OR Bahraini[tiab] OR Djibouti [tiab] OR Djiboutian [tiab] OR Comoros[tiab] OR Egypt[tiab] OR Egyptian[tiab] OR Iraq[tiab] OR Iraqi[tiab] OR Jordan[tiab] OR Jordanian[tiab] OR Kuwait[tiab] OR Kuwaiti[tiab] OR Lebanon[tiab] OR Lebanese[tiab] OR Libya[tiab] OR Libyan[tiab] OR Morocco[tiab] OR Moroccan[tiab] OR Mauritania [tiab] OR Mauritanian [tiab] OR Oman[tiab] OR Omani[tiab] OR Palestine[tiab] OR Palestinian[tiab] OR Qatar[tiab] OR Qatari[tiab] OR "Saudi Arabia"[tiab] OR Saudi[tiab] OR Somalia [tiab] OR Somali [tiab] OR Sudan [tiab] OR Sudanese [tiab] OR Syria[tiab] OR Syrian[tiab] OR Tunisia[tiab] OR Tunisian[tiab] OR [tiab] OR "United Arab Emirates"[tiab] OR Emirati[tiab] OR "UAE"[tiab] OR Yemen[tiab] OR Yemeni[tiab]) OR ("Middle East"[Af] OR "North Africa" [Af] OR Arab*[Af] OR Algeria[Af] OR Bahrain[Af] OR Djibouti [Af] Comoros[Af] OR Egypt[Af] OR [Af] OR Iraq[Af] OR Jordan[Af] OR Kuwait[Af] OR Lebanon[Af] OR Libya[Af] OR Morocco[Af] OR Mauritania [Af] OR Oman[Af] OR Palestine[Af] OR Qatar[Af] OR "Saudi Arabia"[Af] OR Somalia [Af] OR Sudan [Af] OR Syria[Af] OR Tunisia[Af] OR "United Arab Emirates"[Af] OR "UAE"[Af] OR Yemen[Af]
#8	#1 OR #2
#9	#3 OR #4
#6	#8 AND #9 AND #5 AND #6 AND #7 (filter: 1998-2020, Humans, English, Arabic)

Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

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		Reporting Item	Page Number
Title			
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	n/a
Registration			
	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	2
Authors			
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the	12

		guarantor of the review	
Amendments			
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	n/a
Support			
Sources	#5a	Indicate sources of financial or other support for the review	13
Sponsor	#5b	Provide name for the review funder and / or sponsor	13
Role of sponsor or funder	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s), if any, in developing the protocol	13
Introduction			
Rationale	#6	Describe the rationale for the review in the context of what is already known	3-5
Objectives	#7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	5
Methods			
Eligibility criteria	#8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	6,7
Information sources	#9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	7,8
Search strategy	#10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	7
Study records - data management	#11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	8
Study records -	#11b	State the process that will be used for selecting studies (such	8

selection process		as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	
Study records - data collection process	#11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	8,9
Data items	#12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	8,9
Outcomes and prioritization	#13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	9
Risk of bias in individual studies	#14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	9
Data synthesis	#15a	Describe criteria under which study data will be quantitatively synthesised	9
Data synthesis	#15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I2, Kendall's τ)	9
Data synthesis	#15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	9
Data synthesis	#15d	If quantitative synthesis is not appropriate, describe the type of summary planned	n/a
Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	n/a
Confidence in cumulative evidence	#17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	9

BMJ Open

The effects of positive psychology interventions in Arab countries: A protocol for a systematic review

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The effects of positive psychology interventions in Arab countries: A protocol for a systematic review

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Abstract

Introduction Despite the growing volume of published studies on the effects of Positive Psychology Interventions (PPIs), little is known about their effectiveness outside of Western countries, particularly in Arab countries. As the effectiveness of PPIs in this region remains unclear, a systematic review focusing on this area of research can offer a valuable contribution. Here, we present a protocol for the first systematic review that aims to examine the effects of PPIs on increasing well-being, quality of life and resilience, and decreasing depression, anxiety and stress for both health and clinical, child and adult populations in Arab countries.

Methods and analysis This protocol is carried out in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) guidelines. A systematic literature search for studies up to 30 April 2021 will be conducted in the following electronic databases: PsycINFO, PubMed, Scopus, ProQuest, Dar Al Mandumah and Almanhal. Experimental/quasi-experimental quantitative studies evaluating the effects of PPIs on healthy and clinical participants of all ages in the 22 Arab countries will be included. Outcomes will include psychological effects of PPIs on dimensions related to well-being (e.g., happiness), quality of life, resilience, depression, anxiety and stress. The risk of bias will be evaluated using the Cochrane risk-of-bias tool. A narrative synthesis with tables of study characteristics will be provided. A meta-analysis will be included if outcomes allow; in this instance, subgroups analysis will be conducted, depending on the data gathered, to examine differences in effect sizes based on age group, population type, duration of intervention and type of intervention.

Ethics and dissemination Ethical approval was not required for the performance of this systematic review. We intend to publish the study in a peer-reviewed journal and share the findings at relevant conferences.

PROSPERO Registration number CRD42020198092

Strengths and limitations of this study

- This will be the first systematic review to provide an evidence-based review of the effects of PPIs for clinical and healthy populations in the Arab region.

- The main strength is the inclusion, in addition to the English databases, of the two largest Arabic databases.
- An extensive search strategy was developed in consultation with a review team as well as a library specialist for both searches concerning English and translated Arabic terms.
- A description of the intervention types, durations, delivery methods and population types will be provided, enabling investigation of their effectiveness.

Introduction

The Arab region accounts for around 5% of the world's population. As of 2019, this region was home to nearly 427 million inhabitants [1], with 60% being aged under 25 years. Arab countries have recorded the highest burden of mental health disorders globally [2]. In a call for action into mental health research in the Arab region published in the *Lancet*, researchers explained that stigma, reluctance to self-disclose and to seek formal help, conflict and war, were some of the reasons for such high levels of mental health disorders [3].

With the increasing population growth in the region, research directly studying positive mental health and well-being is needed. This research will in turn impact the world, especially with the increasing concern regarding mental health problems caused by the COVID-19 pandemic [4]. Several studies have examined the psychological impact of the ongoing pandemic and reported negative effects on mental health including anxiety, depression and stress [5-8]. These findings emphasize the need to support people during this time through delivering psychological interventions [4-7]. As Positive Psychology Interventions (PPIs) focus on cultivating psychological resilience and well-being as well as alleviating mental health problems [9-14], we believe the findings of this review are an important contribution to addressing of mental health problems resulting from the COVID-19 pandemic.

The past decade has witnessed a rise in research examining PPIs [15]. Sin and Lyubomirsky first defined PPIs as 'intervention, therapy, or activity primarily aimed at increasing positive feelings, positive behaviors, or positive cognitions' [9, p. 469]. Bolier *et al.* assert that PPIs should be designed based on positive psychology theories [10]. Another definition was proposed by Parks and Biswas-Diener in which they emphasize that interventions must target 'positive' variables and have sufficient empirical evidence [16]. PPIs include, but are not restricted

to, gratitude, compassion, strengths, optimism and kindness. While a variety of definitions have been suggested, we define PPIs as psychological interventions (training, therapy) aimed at enhancing positive feelings, behaviours, or cognitions, based on positive psychology theories and research.

Several meta-analyses have found that PPIs have a small to moderate significant effect on well-being and distress in both the general population [e.g. 9, 10, 12] and patients with mental health problems [e.g. 11]. These include meta-analyses that have examined single PPIs [e.g. 9, 10] and multi-component [e.g. 12] PPIs. While studies on PPIs have been mainly examined in Western countries, dominated by Western, Educated, Industrialised, Rich, and Democratic (WEIRD) populations [17], there is now some evidence for their effectiveness in non-Western countries [18]. In a separate systematic review of PPIs in non-Western countries, Hendriks *et al* reported a moderate effect for well-being, and a large effect for depression and anxiety [18]. This review was limited to peer-reviewed English articles published up until 2017. In 2020, Carr *et al.* conducted a meta-analysis including studies published in any language in peer-reviewed journals or grey literature [19]. Upon reviewe of 347 studies, including 3 studies from the Arab region, and reported a small to medium significant effect of PPIs on well-being and distress [19]. They concluded that those who benefitted most from multiple PPIs were clinical samples from non-Western countries, who engaged in the programmes for longer periods. However, they did not search Arabic databases (e.g., Dar Al Mandumah), where most Arabic studies can be found. The present review is designed to address this limitation.

The Arab world consists of 22 countries in the Middle East and North Africa: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates and Yemen. These countries share cultural traditions, histories and a common language. Researchers from the Middle East and North Africa have recently shown an increasing interest in positive psychology. A systematic review investigating the prevalence and characteristics of positive psychology research in the Middle East and North Africa region, published in 2013, was undertaken by Rao, Donaldson and Doiron [20]. Upon reviewing a total of 53 studies, they found that positive psychology research in the region has grown exponentially since 2011. They also found that the region's literature focused on two paths: one path aimed at increasing positive states,

while the other path aimed to coping with adversity. However, this review by Rao and colleagues did not examine the effects of PPIs [20]. The current review attempts to address this gap.

The positive psychology movement originated in the United States [21], which raises concerns about the practical generalisability of PPIs, due to cultural differences between Western 'individualistic' and Eastern 'collectivist' cultures [22, 23]. Because of these differences, we believe it is important to undertake this review. Several studies across the Arab region have recently examined the effects of PPIs [24-29], with studies adapting these interventions to their particular cultures [25, 30, 31]. However, the effects of PPIs in the Arab region remain unclear as, to our knowledge, no systematic quantitative review has yet been published. It is timely and essential to provide the Arab populations with evidence on PPIs to develop a culturally responsive positive psychology [32], as well as an indigenous positive psychology [33].

Objectives

Primary objective

- To examine the effectiveness of PPIs on increasing well-being, quality of life and resilience and decreasing depression, anxiety and stress for both health and clinical, child, adolescent and adult populations in the Arab region.

Secondary objectives

- To identify types of PPIs that have been conducted in the Arab region.
- To determine if the interventions were adapted for the local context.
- To identify variables that may influence the effects of PPIs on outcomes.

Methods and analysis

This protocol was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-P) guidelines [34]. This review has been registered in the International Prospective Registry of Systematic Review – PROSPERO. In the event of protocol amendments, the date of each amendment will be recorded and reported in PROSPERO with a description of changes and its rationale.

Criteria for considering studies for this review

Types of studies

We will include Randomised Controlled trials (RCTs) and quasi-experiments (controlled, non randomised and pre-post intervention studies).

Non-experimental studies (e.g., uncontrolled, cohort, descriptive, observational) and qualitative studies will be excluded. We will include studies published in peer-reviewed journals and dissertations.

Types of participants

Inclusion: Healthy and clinical participants of all ages in the Arab region. The Arab countries include Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen.

Exclusion: Participants from outside the Arab region. When a study includes Arab and non-Arab participants, the study is included if the results of the Arab participants are presented separately.

Patient and public involvement

No patient involved. Data will be collected from published articles.

Types of interventions

Inclusion: Studies will be eligible for inclusion if they investigated the delivery of intervention (training, therapy) aimed at enhancing positive feelings, positive behaviours or positive cognitions. We will include studies examining one intervention (single-component) or two or more interventions (multi-component). The intervention must be explicitly developed in line with the theoretical tradition of positive psychology. PPIs are defined by Sin and Lyubomirsky as 'treatment methods or intentional activities that aim to cultivate positive feelings, behaviours, or cognitions' (p. 467) [9]. PPIs include, but are not restricted to, self-compassion, gratitude, character strengths, mindfulness, optimism (e.g., best possible self), forgiveness, kindness, savouring and humour.

Exclusion: We will exclude studies reporting the effects of physical activity interventions. Studies examining traditional psychotherapeutic interventions (e.g., cognitive behavioural therapy) including a component of positive psychology will also be excluded.

Types of outcome measures

The outcomes of interest are well-being (e.g., happiness, life satisfaction), quality of life, resilience, depression, anxiety and stress. We will include only studies that reported changes in at

least one of those psychological outcome measures, assessed pre-intervention and post-intervention and linked their findings to positive psychology literature.

Search method for identification of studies -

Electronic searches

For English-language literature, the databases that will be searched are:

- PsycINFO
- MEDLINE (via PubMed)
- Scopus
- ProQuest Dissertation and Thesis

For Arabic-language literature, the databases that will be searched are:

- Dar Al Mandumah
- Al Manhal

Limits will be applied to retrieve studies published in the English or Arabic language from 1998 – the inception of the positive psychology movement – to 30 April 2021. The searches will be re-run just before the final analyses, and new studies will be retrieved for inclusion. Manual searches of references will be conducted in relevant papers. We will also search PROSPERO and the Cochrane library for any systematic reviews planned or completed. A range of words and indexed terms related to 'positive psychology interventions' and 'Arab countries' will be searched. The strategies for searching databases will be modelled on the search strategy designed for PubMed (see supplementary file 1. Search Strategy Example). In order for us to develop equivalent search terms in Arabic, AB, the first author, who is a native Arabic speaker, will translate the English search terms in consultation with experts in the field.

Searching other resources

- Reference lists of recent meta-analyses [12, 18, 19] and a review from the Middle East and North Africa region [20] will be searched.
- We will contact experts in the field from the Arab region and ask them to provide sources that might still be missing.
- Hand searching of the Middle East Journal of Positive Psychology, as well as of the recent book called Positive Psychology in the Middle East/North Africa [35] will be carried out.

Reference lists of all eligible studies will be hand-searched to attempt to identify additional relevant studies.

Study records

Data management and selection process

Search results, including citations, abstracts and full-text articles, will be uploaded and recorded to EndNote X9. We will remove duplicates and screen all titles and abstracts against the inclusion criteria. This will be done by AB and then a second reviewer will screen a random 10% of studies independently to ensure consistency. The kappa statistic will be calculated to quantify the interobserver agreement. Where titles and abstracts are deemed to be relevant or unclear, full-text articles will be retrieved and independently screened by two reviewers to identify studies for inclusion. Additional information will be obtained if required. In case of disagreement, a third reviewer will be involved. Studies that are noted as excluded will be recorded, and their reason for exclusion will be reported using a flow diagram following the PRISMA guidelines.

Data extraction process

A data extraction form will be developed and piloted to obtain outcome data from included studies. This will be done by AB, and another reviewer will check the extracted data. Discrepancies will be resolved by discussion. In case of disagreement, the final classification will be made by consensus with the involvement of a third reviewer. Extracted data will be recorded in an excel spreadsheet. Data extracted will include:

1. Country of origin, author(s), year of publication
2. Study method: design (e.g., experimental, quasi-experimental)
3. Sample: (e.g., number of participants, clinical or non-clinical, gender)
4. Type of intervention: single- vs multi-component
5. Delivery form
6. Session duration (number of sessions and duration of session period)
7. Control group
8. Number of participants at follow up
9. Mean/Standard Deviation, p-value, effect size
10. Retention rate (post)

11. Outcome measures, questionnaires used.

Dealing with missing data

In the case of missing data or insufficient information, we will attempt to contact the study authors. If the authors cannot be contacted, available data will be analysed as reported.

Assessment of risk of bias in included studies

We will use the Cochrane risk-of-bias tool, in accordance with the Cochrane handbook to assess the methodological quality of the included studies. This will be done by two reviewers independently. In the case of disagreements, a discussion will be conducted with a third reviewer to reach a consensus. In the case of insufficient or additional information, we will contact the study authors. The assessments will be classified into three levels: low risk, some concerns, and high risk.

Data synthesis

We will provide a narrative synthesis of all the included studies' findings, with tables of study characteristics, participants, intervention details, and outcome measures. Where possible, quantitative data will be pooled for a meta-analysis. Multilevel modelling will be conducted to synthesize multiple effect sizes from single studies.

Subgroup analysis

Depending on the data gathered, subgroups may be formed and outcomes explored according to age or clinical nature of samples. Subgroup analyses will be conducted to examine moderating effects of the following possible moderators. The moderators are:

1) age group: Child/ adolescent (up to 17 years old) or adult (18 years old and up);
2) study population: clinical or non-clinical;
3) type of intervention: single- component or multi-component;
4) duration of intervention: short (<8 weeks) or long (>8 weeks).

Ethics and dissemination

This systematic review will use data from published literature; hence, no ethical approval will be required. The results of this systematic review will be submitted to a peer-reviewed international journal and shared at relevant conferences.

Discussion

PPIs have the potential to improve mental health and promote well-being. However, much uncertainty still exists in examining the application of these interventions in the Arab region, as most studies have only focused on Western samples. This review will be the first study to systematically review the efficacy of PPIs in the Arab region. The findings of this review are expected to provide health/clinical populations of all ages in the Arab region with a detailed and evidence-based overview of the overall effects of PPIs that will enrich the field of positive psychology and mental health. In turn, this will contribute to evaluating these types of interventions and strengthen their generalisability by providing a multi-cultural perspective [33] for health professionals and practitioners in the field.

Footnotes

Contributors: AB and ZDB conceptualised, designed and registered the protocol. AB and ZDB developed the search strategy with the assistance of an information specialist and contributions from co-authors (MM, AS, MW, LL). AB will screen potential studies, extract data, assess the risk of bias, and complete data synthesis, along with a second reviewer (TS). Statistical analysis will be conducted by MM. All co-authors (AB, ZDB, MM, AS, MW, LL, TS) critically revised the protocol, provided feedback and approved the final manuscript.

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Patient consent for publication: Not required.

Provenance and peer review: Not commissioned; externally peer reviewed.

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Supplementary File 1. Search Strategy Example

Search strategy: PubMed

#1	"positive psych*"[tiab] OR "positive intervention"[tiab] OR positivity [tiab] OR "posttraumatic growth"[tiab] OR "personal growth"[tiab] OR optimism[tiab] OR hope [tiab] OR gratitude[tiab] OR blessing*[tiab] OR "three good things"[tiab] OR mindfulness[tiab] OR kindness[tiab] OR "best possible self"[tiab] OR "character strengths"[tiab] OR strengths[tiab] OR meaning*[tiab] OR humor[tiab] OR humour[tiab] OR savoring[tiab] OR savouring[tiab] OR forgiveness[tiab] OR compassion [tiab] OR empathy[tiab] OR engagement[tiab] OR altruism[tiab] OR reminiscence[tiab] OR "positive thinking"[tiab] OR "optimistic thinking"[tiab] OR "positive emotions"[tiab] OR "positive writing"[tiab] OR self-regulat*[tiab] OR empowerment[tiab] OR "growth mindset"[tiab] OR well-being[tiab] OR wellbeing[tiab] OR "well being"[tiab] OR happiness[tiab] OR happy[tiab] OR "life satisfaction"[tiab] OR "satisfaction with life"[tiab] OR resilience[tiab] OR hardiness[tiab] OR "relationship satisfaction"[tiab] OR "relationship quality"[tiab] OR thriving[tiab] OR flourishing[tiab] OR "job satisfaction"[tiab] OR morale[tiab]
#2	"Psychology, Positive" [MAJR] OR Positive Psychology[Mh] OR Well Being[Mh] OR Optimism[Mh] OR "Hope"[MAJR] OR "Mindfulness/methods"[MAJR] OR "Character"[MAJR] OR "Forgiveness"[MAJR] OR Compassion[Mh] OR "Work Engagement"[Mh] OR "Happiness"[MAJR] OR Happiness[Mh] OR "Resilience, Psychological"[Mh] OR Life Satisfaction[Mh]
#3	Program*[tiab] OR intervention*[tiab] OR therap*[tiab] OR treatment*[tiab] OR Training[tiab] OR Exercise[tiab]
#4	Therapy[Mh] OR Psychotherapy[Mh] OR Training[Mh] OR Exercise[Mh]
#5	effect*[tiab] OR effic*[tiab] OR outcome*[tiab] OR evaluat*[tiab]
#6	random*[tiab] OR RCT*[tiab] OR Trial*[tiab] OR non-random*[tiab] OR experiment*[tiab] OR quasi-experiment*[tiab] OR control*[tiab] OR condition [tiab]
#7	"Middle East"[tiab] OR "North Africa"[tiab] OR Arab*[tiab] OR Algeria[tiab] OR Algerian[tiab] OR Bahrain[tiab] OR Bahraini[tiab] OR Djibouti [tiab] OR Djiboutian [tiab] OR Comoros[tiab] OR Egypt[tiab] OR Egyptian[tiab] OR Iraq[tiab] OR Iraqi[tiab] OR Jordan[tiab] OR Jordanian[tiab] OR Kuwait[tiab] OR Kuwaiti[tiab] OR Lebanon[tiab] OR Lebanese[tiab] OR Libya[tiab] OR Libyan[tiab] OR Morocco[tiab] OR Moroccan[tiab] OR Mauritania [tiab] OR Mauritanian [tiab] OR Oman[tiab] OR Omani[tiab] OR Palestine[tiab] OR Palestinian[tiab] OR Qatar[tiab] OR Qatari[tiab] OR "Saudi Arabia"[tiab] OR Saudi[tiab] OR Somalia [tiab] OR Somali [tiab] OR Sudan [tiab] OR Sudanese [tiab] OR Syria[tiab] OR Syrian[tiab] OR Tunisia[tiab] OR Tunisian[tiab] OR [tiab] OR "United Arab Emirates"[tiab] OR Emirati[tiab] OR "UAE"[tiab] OR Yemen[tiab] OR Yemeni[tiab]) OR ("Middle East"[Af] OR "North Africa" [Af] OR Arab*[Af] OR Algeria[Af] OR Bahrain[Af] OR Djibouti [Af] Comoros[Af] OR Egypt[Af] OR [Af] OR Iraq[Af] OR Jordan[Af] OR Kuwait[Af] OR Lebanon[Af] OR Libya[Af] OR Morocco[Af] OR Mauritania [Af] OR Oman[Af] OR Palestine[Af] OR Qatar[Af] OR "Saudi Arabia"[Af] OR Somalia [Af] OR Sudan [Af] OR Syria[Af] OR Tunisia[Af] OR "United Arab Emirates"[Af] OR "UAE"[Af] OR Yemen[Af]
#8	#1 OR #2
#9	#3 OR #4
#6	#8 AND #9 AND #5 AND #6 AND #7 (filter: 1998-2020, Humans, English, Arabic)

Reporting checklist for protocol of a systematic review.

Based on the PRISMA-P guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

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In your methods section, say that you used the PRISMA-Preporting guidelines, and cite them as:

Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. Syst Rev. 2015;4(1):1.

		Reporting Item	Page Number
Title			
Identification	#1a	Identify the report as a protocol of a systematic review	1
Update	#1b	If the protocol is for an update of a previous systematic review, identify as such	n/a
Registration			
	#2	If registered, provide the name of the registry (such as PROSPERO) and registration number	2
Authors			
Contact	#3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contribution	#3b	Describe contributions of protocol authors and identify the	12

		guarantor of the review	
Amendments			
	#4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	n/a
Support			
Sources	#5a	Indicate sources of financial or other support for the review	13
Sponsor	#5b	Provide name for the review funder and / or sponsor	13
Role of sponsor or funder	#5c	Describe roles of funder(s), sponsor(s), and / or institution(s), if any, in developing the protocol	13
Introduction			
Rationale	#6	Describe the rationale for the review in the context of what is already known	3-5
Objectives	#7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	5
Methods			
Eligibility criteria	#8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	6,7
Information sources	#9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	7,8
Search strategy	#10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	7
Study records - data management	#11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	8
Study records -	#11b	State the process that will be used for selecting studies (such	8

selection process		as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	
Study records - data collection process	#11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	8,9
Data items	#12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	8,9
Outcomes and prioritization	#13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	9
Risk of bias in individual studies	#14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	9
Data synthesis	#15a	Describe criteria under which study data will be quantitatively synthesised	9
Data synthesis	#15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I2, Kendall's τ)	9
Data synthesis	#15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	9
Data synthesis	#15d	If quantitative synthesis is not appropriate, describe the type of summary planned	n/a
Meta-bias(es)	#16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	n/a
Confidence in cumulative evidence	#17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	9