

The effectiveness of listening to the Holy Quran to improve mental disorders and psychological well-being: Systematic review and meta-analysis

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Abstract

Background: Listening to the Quran is one of spiritual therapies that have been used for treating mental disorders. Many studies have been conducted to assess the effect of listening to the Quran on mental health and psychological wellbeing. Several reviews were conducted to summarise results of such evidence. However, they either focused on studies published in a certain country (Iran), focused on certain setting (intensive care unit), or were written by Persian language. Moreover, none of them synthesised results of studies statistically.

Objective: The study aimed to assess the effectiveness of listening to the Quran to improve mental disorders and psychological well-being by summarizing and pooling the findings of previous literature.

Methods: A systematic review was conducted to accomplish this objective. The search sources included 6 bibliographic databases (e.g., MEDLINE, PsycINFO, CINHALL), the search engine "Google Scholar", and backward and forward reference list checking of the included studies and relevant reviews. Two reviewers independently carried out the study selection, data extraction, risk of bias assessment, and quality of evidence evaluation. Results of the included studies were synthesized narratively and statistically, as appropriate.

Results: Of 1724 citations retrieved, 11 studies met the eligibility criteria. Of these studies, 7 were included in meta-analysis. The evidence showed that listening to the Quran is significantly effective in improving state anxiety, trait anxiety, general anxiety, depression, stress and mental health. However, the evidence quality ranged from very low to low due to the high risk of bias, heterogeneity, and impression.

Conclusion: Listening to the Quran has the potential to improve mental disorders and psychological well-being. Until high-quality studies approve its effect, health professionals and individuals should consider listening to the Quran as a complementary therapy to already available interventions. Researchers should conduct further studies to compare the effectiveness of reciting and listening to the Quran and Al-Ruqya Al-Shariya with active interventions on mental disorders and psychological well-being among Muslims and non-Muslims from different countries.

Introduction

1.1 Background

Mental disorders are a growing public health concern worldwide [1]. One-quarter of adults and 10% of children may be affected by mental disorders yearly [2]. Mental disorders have a substantial impact on the lives of millions of people and on community and economy [3]. Globally, mental disorders are deemed as one of the most common causes of disability [4]. In 2010, about 10% of global Disability-Adjusted Life Years (DALYs) and 28.5% of global Years Lived with Disability (YLDs) were caused by mental, neurological and substance use disorders [5].

Pharmacological treatments are usually used for treating mental disorders [6]. However, non-pharmacological interventions may be preferred by patients due to the risk of adverse events that pharmacological treatments may cause [7]. According to a systematic review conducted by Gartlehner et al. [8], adverse events were experienced by about 63% of patients who had second-generation antidepressants, and this led to discontinuing treatment in 7% and 15% of patients.

There is a large number of non-pharmacological interventions reported by the Cochrane Depression and Neurosis Group [9] and Australian patient advocacy group [10], such as cognitive behavioural therapy, meditation, music, massage, relaxation, yoga, aromatherapy, and spiritual therapies. Listening to the Quran is one of spiritual therapies that have been used for treating mental disorders [11].

Quran is a holy book for Muslims, who believe that it was revealed by God to the final prophet, Mohammad. Quran consists of 114 chapters (Surah), which are composed of different numbers of verses (Ayah). Several verses in the Quran indicate directly or indirectly to its ability in healing and achieving tranquility. For example, God says in Surah al-Isra' verse 82: *"And We send down of the Qur'an that which is healing and mercy for the believers"*. God also says in Surah Yunus verse 57: *"O people! There has come to you advice from your Lord, and healing for what is in the hearts, and guidance and mercy for the believers"*.

1.2 Research problem and aim

Numerous studies have been conducted to assess the effect of listening to the Quran on mental health and psychological wellbeing [12-18]. Three systematic reviews were conducted to summarise such studies [11, 19, 20]. The first review focused on the effect of listening to the Quran on anxiety in Iranians [19]. The second review assessed the physiological and psychological effects of listening to the Quran in the intensive care unit patients [11]. The last review was written in the Persian language and examined the effect of listening to Quran on hygiene, mental health, and physiological functions. None of these reviews statistically synthesized results of the included studies. There is a pressing need to address the aforementioned shortcomings of the previous reviews by conducting a systematic review, including meta-analysis, to assess the effectiveness of listening to the Quran on mental health and psychological wellbeing in any setting in any country. To fill this gap, this study aimed to assess the effectiveness of listening to the Quran on mental disorders and psychological well-being by summarizing and pooling the findings of previous literature.

Methods

A systematic review was conducted to achieve the objective of this study. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement were followed in this review [21] (Appendix 1). The protocol for this review is registered at PROSPERO with the number CRD150963.

2.1 Search strategy

2.1.1 Search sources

The bibliographic databases searched in the current review were MEDLINE (via Ovid), EMBASE (via Ovid), PsycInfo (via Ovid), CINAHL (via EBSCO), Scopus, Web of Knowledge, Google Scholar. The first 100 hits (10 pages) in Google Scholar were screened because it retrieved thousands of studies ordered by their relevance to the search topic. Reference lists of the included studies and reviews were screened for further studies of relevance to the review (Backward reference list checking). Additionally, we used the “cited by” function available in Google Scholar to identify studies that cited the included studies (forward reference list checking).

2.1.2 Search terms

Terms used to search the bibliographic databases were related to the intervention (e.g., the Quran, ruqyah, spiritual healing) and study design (e.g., trial and experiment). Appendix 2 shows the search strings used for searching each bibliographic database.

2.2 Study eligibility criteria

The population of interest was individuals with or without health problems regardless of their age, gender, ethnicity, and religion. Eligible interventions were reciting or listening to the Quran or Al-Ruqya Al-Shariya regardless of the used chapter (Surah), reciter, duration, and frequency. Al-Ruqya Al-Shariya is an Islamic therapy where a patient listens or recites verses of the Quran and prayers taken from the Quran and Prophet Mohammed [22]. However, the following non-quranic interventions were excluded: Hazrat Zahra’s praises (saying the word Allah 100 times), Sahifeh Sajadiyeh, supplications, prayers, mustahab praises (e.g., Subhan Allah, Alhamdulillah, Allah Akber). The outcomes of interest were any symptoms of mental disorders or issues (depression, anxiety, stress, phobia) and psychological well-being. Outcomes related to physiological disorders and physical health were excluded in this review. Only randomized controlled trials (RCTs) were included in the current review. The following types of publication were included: peer-reviewed articles, dissertations, conference proceedings. We excluded reviews, conference abstracts, proposals and editorials. This review included only studies written in the English language. No restrictions were applied related to the comparator, country of publication, and year of publication.

2.3 Study selection

The studies were selected based on two steps. In the first step, two reviewers (AAM & AHM) independently sifted titles and abstracts of all retrieved citations. In the second step, both reviewers independently read full texts of studies included from the previous step. A third reviewer (AA) resolved any disagreements between both reviewers. Interrater agreement between reviewers was examined using Cohen’s kappa [23], and it was 0.70 and 0.79 in the first and second step of the selection process respectively; indicating a good level of agreement according to Altman [24].

2.4 Data extraction

To conduct a systematic and accurate extraction of data, we developed a data extraction form and piloted it using 4 included studies (Appendix 3). Data were extracted from the included studies by two reviewers (AAM & AHM). A third reviewer (AA) resolved disagreements between both reviewers. Interrater agreement between reviewers was very good (Cohen's kappa = 0.86) [24].

2.5 Assessment of risk of bias

Risk of bias in the included studies was assessed using the Risk-of-Bias 2 (RoB 2) tool, which was developed and recommended by Cochrane Collaboration [25]. RoB assesses the risk of bias in RCTs in terms of 5 domains: the randomization process, deviations from intended interventions, missing outcome data, measurement of the outcome, and selection of the reported result [25]. According to risk of bias judgments in these domains, overall risk of bias will be determined for each study [25]. Risk of bias results were summarized using a graph showing reviewers' judgments about each "risk of bias" domain for all included studies. They were also presented as a figure showing reviewers' judgments about each "risk of bias" domain for each included study. Risk of bias was assessed by two reviewers (AAM & AHM), and the third reviewer (AA) resolved disagreements between both reviewers. There was a good interrater agreement between the reviewers (Cohen's kappa = 0.66) [24].

2.6 Data Synthesis

Findings of the included studies were grouped according to the measured outcome (e.g., anxiety and depression). When there was more than one RCT examining the same comparison for a given outcome, findings were synthesized statistically using meta-analysis. Otherwise, a narrative approach was used to synthesize the findings.

Review Manager (RevMan 5.3) was utilized to conduct a meta-analysis. Given that all extracted data were continuous, the effect of each trial and the overall effect were measured using either the mean difference (MD) or the standardized mean difference (SMD). Specifically, the MD was used to meta-analyze data of an outcome assessed using the same tool in the studies. The SMD was selected when, between studies, the outcome was measured using different tools. Given the clinical heterogeneity between studies in terms of population (hemodialysis patients, pregnant women, depressed women, and healthy athletes) and intervention (listening to different chapters of the Quran for different period), random-effects was used as an analysis model.

When results showed a statistically significant difference between two groups, we examined whether this difference was clinically important. Minimal clinically important difference is defined as the smallest change in a measured outcome that a patient would deem as worthy and significant and which mandate a change in a patient's treatment [26].

To assess clinical heterogeneity, we checked differences between studies in terms of participants, interventions, comparators, measured outcomes, and study design. With regards to statistical heterogeneity, we checked the statistical significance of heterogeneity (Chi^2 P -value) and I^2 [27]. Chi^2 P -

value of 0.05 or lower indicates that the studies are heterogeneous [27]. I^2 between 0%-40%, 30%-60%, 50%-90%, and 75%-100% represents unimportant, moderate, substantial, and considerable heterogeneity, respectively [27].

Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach was used to assess the overall quality of the evidence that was synthesized statistically [28]. The quality of the evidence was assessed by two reviewers (AAM & AHM), disagreements were resolved by the third reviewer (AA). Cohen's kappa was 0.78 indicating good interrater agreement between the reviewers according to Altman [24].

Results

3.1 Search results

As shown in Figure 1, 1724 citations were retrieved by searching the electronic databases. Of those, 566 duplicates were excluded. By screening titles and abstracts of the remaining 1158 citations, we excluded 1130 citations for several reasons detailed in Figure 1. Of the remaining 28 studies, we included 8 studies after reading the full texts. By backward reference list checking, three additional studies were found and added to this review. Overall, 11 studies were included in a narrative synthesis [29-39], and 7 of those studies were included in a meta-analysis [29-31, 34, 35, 37, 38].

3.2 Characteristics of included studies

As detailed in Table 1, all included studies were published in the last nine years (2011-2019). Most studies (8/11) were conducted in Iran. The study design used in all studies was the randomised controlled trial (RCT). The sample size ranged between 12 and 168 with a mean of 65 participants. The mean age, reported in only 9 studies, ranged from 21 to 65 with a mean of 41 years. Of the 10 studies that reported sex, the mean percentage of males was 30% with a value of zero in 5 studies. In the included studies, the target population was: pregnant women (n=3 studies), haemodialysis patients (n=3 studies), patients waiting for surgery (n= 2 studies), medical staff (n=1 study), athletes (n=1 study), and depressed women (n=1 study). Participants were Muslims in 6 studies while the rest of the studies did not report the religion of participants. Most studies (9 of 11) recruited participants from clinical settings (hospital or healthcare centre).

Table 1: Characteristics of studies and population.

Study ID	Year	Country	Study design	Sample size	Mean age	Sex (male)	Participants	Religion	Setting
Babaii ²⁹	2015	Iran	RCT	60	55.3	-	Patients waiting for cardiac catheterization	-	Hospital
Babamohamadi ³⁰	2015	Iran	RCT	60	53	57.3%	Hemodialysis patients	Muslims	Hospital
Babamohamadi ³¹	2017	Iran	RCT	54	53.3	57.4%	Hemodialysis patients	Muslims	Hospital
Darabinia ³²	2017	Iran	RCT	80	44.9	45%	Medical staff	Muslims	University
Frih ³³	2017	Tunisia	RCT	53	64.9	100%	Hemodialysis patients	-	Hospital
Hamidiyanti ³⁴	2019	Indonesia	RCT	32	-	0%	Pregnant women	Muslims	Healthcare centre
Jabbari ³⁵	2017	Iran	RCT	168	27.2	0%	Pregnant women	Muslims	Healthcare centre
Kadkhodaei ³⁶	2019	Iran	RCT	54	24.2	0%	Pregnant women	-	Hospital
Mirsane ³⁷	2016	Iran	RCT	60	-	38.4%	Patients undergoing general surgery	-	Hospital
Mottaghi ³⁸	2011	Iran	RCT	80	21.4	0%	Athletes	-	University
Rafique ³⁹	2019	Pakistan	RCT	12	23.3	0%	Women with depression	Muslims	Hospital

In most studies (8 of 11), the intervention was listening to one whole chapter (Surah) of the Quran, such as Ya-Sin, Ar-Rahman, Maryam, Yusuf, and Al-Waqi'ah (Table 2). The intervention was listening to all chapters of the Quran in one study. The frequency of the intervention varied between studies: once, three times a week for one month, three times a week for 6 months, one time a day for three months, and two times a day for one month. The listening duration was ranged from 3 to 45 minutes with a mean of 21 minutes. Different reciters of the Quran were selected in the study, such as Al-Afasy, Al-Shateri, Al-Dosari, and Abdul Basit. MP3 players were used for delivering the intervention in most studies (8 of 11).

Table 2: Characteristics of interventions.

Study ^{ID}	Chapter (Surah)	Verse (Ayah)	Frequency	Time (minute)	Reciter	Technology used
Babaii ²⁹	Ya-Sin	Whole surah	One time	18	Al-Afasy	MP3 player with headphones
Babamohamadi ³⁰	Ya-Sin	Whole surah	Three times a week for one month	20	Al-Shateri	MP3 player with headphones
Babamohamadi ³¹	Ya-Sin	Whole surah	Three times a week for one month	20	Al-Shateri	MP3 player with headphones
Darabinia ³²	Random	-	One time a day for three months	3	Random reciters	Building's speakers
Frih ³³	All	Whole surah	Three times a week for 6 months	20	Al-Dosari	MP3 player with headphones
Hamidiyanti ³⁴	Ar-Rahman	Whole surah	Three times a week for one month	15	Al-Ghomidi	MP3 player with headphones
Jabbari ³⁵	Maryam	Whole surah	One time a day for three weeks	20	Master Parhizgar	MP3 player
Kadkhodaei ³⁶	Yusuf	Whole surah	One time	45	-	MP3 player with headphones
Mirsane ³⁷	Al-Waqi'ah	Whole surah	One time	30	Fifth researcher	-
Mottaghi ³⁸	Random	-	One time	15	Random reciters	Tape-recorder
Rafique ³⁹	Ar-Rehman	Whole surah	Two times a day for one month	22	Abdul Basit	MP3 player

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As shown in Table 3, the control group received no intervention in 7 studies while music and physical training were delivered to the control group in 2 and 1 study, respectively. The frequency and duration of the active comparators varied between studies. Overall studies assessed the effect of the intervention on at least one of four outcomes: anxiety, depression, stress, and mental health. Different tools were used to measure study outcomes, Spielberger State-Trait Anxiety Inventory (STAI) was the most common (n=5). The follow-up period ranged between 0 and 24 weeks.

Table 3: Characteristics of comparators and measured outcomes.

Study ^{ID}	Comparator	Frequency	Time (minute)	Outcome	Outcome measure	Follow-up
Babaii ²⁹	No intervention	-	-	Anxiety	STAI	Directly after the intervention
Babamohamadi ³⁰	No intervention	-	-	Depression	BDI-II	4 weeks
Babamohamadi ³¹	No intervention	-	-	Anxiety	STAI	4 weeks
Darabinia ³²	No intervention	-	-	Mental health	Unkown	12 weeks
Frih ³³	Physical training	Four times a week for 24 weeks	240	Anxiety and Depression	HADS	24 weeks
Hamidiyanti ³⁴	No intervention	-	-	Anxiety	HARS	Directly after the intervention
Jabbari ³⁵	No intervention	-	-	Depression, Anxiety, and stress	EPDS, STAI, PSS	4 and 8 weeks
Kadkhodaei ³⁶	Music	One time	45	Anxiety	STAI	Directly after the intervention
Mirsane ³⁷	No intervention	-	-	Anxiety	STAI	Directly after the intervention and 30 minutes before surgery
Mottaghi ³⁸	No intervention	-	-	Anxiety	MCAQ	Directly after the intervention
Rafique ³⁹	Music	Two times a day for 4 weeks	22	Depression	BDI-II	4 weeks

BDI-II: Beck Depression Inventory-II

EPDS: Edinburgh Postnatal Depression Scale

HADS: The Hospital Anxiety and Depression Scale

HARS: Hamilton Anxiety Rating Scale

MCAQ: Marten's competitive anxiety questionnaires

PSS: Perceived Stress Scale

STAI: Spielberger State-Trait Anxiety Inventory

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3.3 Risk of bias in the included studies

As shown in Figure 2, the domain of randomisation process was judged as 'some concerns' in most studies (10 of 11). This was due to lack of information about allocation sequence and concealment. In all studies, participants, carers, and individuals delivering the interventions were aware of assigned intervention during the trial. No information was reported regarding deviation arose due to the experimental contexts. Thus, the domain of deviations from the intended interventions was rated as 'some concerns' in all studies. Given that outcome data were available for all, or almost all, participants in

most studies (10 of 11), the domain missing outcome data was judged as 'low risk' in these studies. In all studies, risk of bias in the measurement of the outcome was high because assessors of the outcome were aware of the intervention received by participants; this knowledge could affect the outcome assessment. The domain of selection of the reported result was judged as some concerns in all studies due to either unavailability of study protocols or insufficient details in published protocols regarding outcome measurements and analyses. As there was a 'high risk' of bias in at least one domain in all studies, the domain of overall bias was rated as 'high risk' in these studies. Reviewers' judgements about each 'risk of bias' domain for each included study are shown in Appendix 4.

3.4 Results of studies

3.4.1 Anxiety

Eight studies examined the effect of listening to the Quran on anxiety [29, 30, 33-38]. While six of these studies were conducted in Iran [29, 30, 35-38], the remaining two studies were carried out in Tunisia [33] and Indonesia [34]. The target population was pregnant women in [34-36], haemodialysis patients [30, 33], patients waiting for surgery [29, 37], and athletes [38]. Inactive comparator (i.e. no intervention) was used in 6 studies [29, 30, 34, 35, 37, 38] while 2 studies used an active comparator; physical training [33] and music [36]. For this reason, results of these 6 studies were statistically synthesised (i.e. meta-analysis), and the results of the 2 studies were synthesised narratively. Anxiety was measured using STAI [29, 30, 35-37], HADS [33], HARS [34], and MCAQ [38]. STAI measures two aspects of anxiety: state anxiety and trait anxiety. While the former refers to transient anxiety resulting from an adverse event at a certain moment in time, the latter refers to a personal characteristic that describes the relatively stable tendency to perceive an adverse event as dangerous or stressful and to react to such events [40, 41]. Given that state anxiety, trait anxiety, and general anxiety are different outcomes, a meta-analysis was conducted for each distinct outcome.

For state anxiety, 4 studies reported enough data to conduct meta-analysis [29, 30, 35, 37]. As shown in Figure 2, the overall effect is statistically significant ($P<0.001$) indicating that listening to the Quran is more effective than no intervention in decreasing state anxiety in haemodialysis patients, pregnant women, and patients waiting for a surgery: mean difference (MD) -14.75 (95% confidence interval (CI) -19.88 to -9.63). This difference was also clinically important as the overall effect and its CI were outside minimal clinically important difference (MCID) boundaries (-3.8 to 3.8); MCID boundaries for this outcome were calculated as ± 0.5 times the median standard deviation (SD) of the control arms of studies at baseline. Heterogeneity of the evidence was considerable in this analysis ($P<0.001$; $I^2=96\%$). The quality of the evidence was very low due to high risk of bias and heterogeneity (Appendix 5). One study assessed the effect of the Quran on state anxiety compared to music [36]. That study found a statistically significant difference ($P=0.02$) favoring the Quran over music on state anxiety in primiparous women (i.e. pregnant for the first time).

In relation to trait anxiety, the above-meta-analysed studies were also reported sufficient data to perform a meta-analysis. Figure 3 shows that there is a statistically significant difference ($P<0.001$) favoring listening to the Quran over no intervention on trait anxiety in haemodialysis patients, pregnant women, and patients waiting for surgery; MD -12.38 (95% CI -16.64 to -8.11). This difference was also clinically important because that overall effect and its CI were outside MCID boundaries (-3.125 to 3.125); MCID boundaries for this outcome were calculated as ± 0.5 times the median SD of the control arms of studies at baseline. There was considerable heterogeneity among the studies ($P<0.001$; $I^2=96\%$). The quality of the evidence was very low due to high risk of bias and heterogeneity (Appendix 5). Kadkhodaei et al. demonstrated that listening to the Quran is more effective than listening to music in reliving trait anxiety in primiparous women ($P=0.04$) [36].

With regards to general anxiety, 4 studies reported adequate data to carry out a meta-analysis [29, 30, 34, 38]. As presented in Figure 4, there is a statistically significant difference ($P<0.001$) favoring listening to the Quran over no intervention on anxiety in haemodialysis patients, pregnant women, patients waiting for a surgery, and athletes; standardised mean difference (SMD) -2.06 (95% CI -2.57 to -1.54). This difference was also clinically important as the overall effect and its CI were outside MCID boundaries (-1.03 to 1.03); MCID boundaries for this outcome were calculated as ± 0.5 times the SMD value (-2.06). There was moderate heterogeneity of the evidence ($I^2= 59\%$), but it was not a concern as P -value was higher than 0.05 ($P=.06$). The quality of the evidence was low due to high risk of bias (Appendix 5). A study conducted by Frih et al. [33] showed that listening to the Quran and physical training is more effective than only physical training in reducing general anxiety in hemodialysis patients ($P<0.05$).

3.4.2 Depression

The effect of listening to the Quran on depression was examined in 4 studies [31, 33, 35, 39]. The studies were conducted in Iran [31, 35], Tunisia [33], and Pakistan [39]. The target population was haemodialysis patients [31, 33], pregnant women [35], and depressed women [39]. Depression was measured using BDI-II [31, 39], HADS [33], and EPDS [35]. Two studies did not deliver any intervention to the control group [31, 35], however, the other two studies delivered physical training [33] and music [39] to the control group. Accordingly, only the former two studies were meta-analysed in the current review [31, 35].

As shown in Figure 5, the overall effect was statistically significant ($P=0.01$) indicating that listening to the Quran is more effective than no intervention in decreasing depression in haemodialysis patients and pregnant women: SMD -3.77 (95% CI -6.68 to -0.87). This difference was also clinically important as the overall effect were outside MCID boundaries (-1.89 to 1.89) and its CI did not cross 'no effect' line (Zero effect). MCID boundaries for this outcome were calculated as ± 0.5 times the SMD value (-3.77). There was considerable heterogeneity among studies ($P<0.001$; $I^2=97\%$). The quality of the evidence was very low due to high risk of bias, heterogeneity, and impression (Appendix 5). According to Frih et al. [33], listening to the Quran and physical training is more effective than physical training alone in reducing depression in hemodialysis patients ($P<0.05$). Further, Rafique et al. found that there is a statistically

significant difference ($P=0.005$) favoring listening to the Quran over listening to music on depression in depressed women.

3.4.3 Mental health

One Iranian study assessed the effect of listening to the Quran on overall mental health [32]. The study showed that there is a statistically significant difference ($P=0.001$) favoring listening to the Quran over no intervention on overall mental health in medical staff [32]. Further, the study demonstrated that the effect of listening to the Quran on overall mental health was higher for females between the ages of 40-50 than males younger than 40 and older than 50 [32].

3.4.4 Stress

An Iranian study examined the effect of listening to the Quran with or without Persian translation on stress in pregnant women [35]. The study found that there was a statistically significant difference ($P=0.001$) favoring listening to the Quran with or without translation over no intervention on stress as measured at the 4th and 8th week since the beginning of the intervention [35].

Discussion

4.1 Principal findings

The current systematic review assessed the effectiveness of listening to the Quran on mental disorders and psychological well-being. The 11 included studies assessed its effectiveness on at least one of the four outcomes: anxiety, depression, stress, and overall mental health.

The current review showed a statistically and clinically important difference favoring listening to the Quran over no intervention on state anxiety, trait anxiety, and general anxiety in haemodialysis patients, pregnant women, patients waiting for a surgery, and athletes. Further, the evidence demonstrated that listening to the Quran is more effective than music and physical training in reducing state and trait anxiety and general anxiety in primiparous women and hemodialysis patients, respectively. However, all above-mentioned findings resulted from low or very low quality of evidence that had high risk of bias. In a systematic review conducted by Ghiasi & Keramat [19], the effect of listening to the Quran on anxiety were examined in 28 studies. Of these studies, only 4 were included in the current review. The remaining 24 studies were not included in the current review because either they were written in Persian language, or their full text was not available [19]. Although Ghiasi and Keramat's review did not meta-analyse results of the included studies, its conclusion was in line with our conclusion [19]. To be more precise, Ghiasi and Keramat revealed that listening to the Quran is more effective than no intervention, music, and muscle relaxation in reducing anxiety in various settings [19]. This finding supports our conclusion regarding the effect of listening to the Quran on anxiety.

Our review found a statistically and clinically important difference favoring listening to the Quran over no intervention on depression in haemodialysis patients and pregnant women. Listening to the Quran was

also more effective than music and physical training in reducing depression in depressed women and hemodialysis patients, respectively. However, all aforementioned conclusion resulted from very low quality of evidence that had a high risk of bias. The effect of listening to the Quran on depression was not examined by any systematic review before the current review. However, a study excluded from the current review due to language (Persian) supported our findings [16]. Specifically, Jaber and colleagues revealed that listening to the Quran significantly reduced depression in depressed patients in comparison with no intervention [16]. Similarly, an RCT found that spiritually integrated psychotherapy is more effective than no intervention in reducing depression in Muslims diagnosed with depressive disorder [17]. Spiritually integrated psychotherapy consisted of daily lectures on Quranic verses, listening to the Quran, encouraging participants to recite the Quran [17]. A cross-sectional survey excluded from the current review due to study design revealed that Iranian students who recite Quran have less depression than those who do not recite it [18].

In the current review, evidence from a single RCT showed a statistically significant difference favouring listening to the Quran over no intervention on mental health in medical staff. However, the risk of bias was rated as high in the RCT. Our findings are consistent with those of other studies excluded from the current review due to study design (quasi-experiment) [42], and language (Persian) [43]. The former study demonstrated that listening to the Quran without its musical tone (Tartil) had a positive influence on mental health in Iranian personnel in a university [42]. The latter study found that listening to the Quran significantly improved mental health in Iranian nursing students in comparison with no intervention [43].

Only one of the included studies revealed that listening to the Quran is more effective than no intervention in relieving stress in pregnant women. Yet, that evidence had a high risk of bias. Our findings are in line with what has been found by three studies excluded from the current review due to language (Persian) [44, 45] and study design (a cross-sectional survey) [18]. The former two studies found a statistically significant difference favouring listening to the Quran over no intervention on stress in Iranian young people & adolescents [44] Iranian personnel in a university [45]. The third study revealed that Iranian students who recite Quran have less stress than those who do not recite it [18].

The effect of listening to the Quran on mental disorders and psychological well-being may be attributed to the fact that listening to the Quran may increase religiosity and spirituality, which were found to have a positive effect on several mental disorders, such as depressive symptoms [46-50] and anxiety [51-54]. From a psychological perspective, the effect of the Quran can be explained by its ability to relax, reinforce and generate positive and pleasant thoughts, divert the mind from unpleasant irritations and ruminations, and restore harmony between the body and soul [31, 33]. The relaxing abilities of listening to the Quran may also result from its sound, meaning of its words, its miraculous combination of words within verses, and its rhythmic agreeable intonation [16, 33]. From a physiological perspective, Babamohamadi and colleagues believe that listening to the Quran may result in release of endorphins in the brain, which were found to affect mood and memory positively [31].

4.2 Strengths and limitations

4.2.1 Strengths

The current study is the first systematic review that focused on effectiveness of listening to Quran on mental disorders and psychological well-being, meta-analysed results of studies, followed the PRISMA statement. Therefore, it is a more comprehensive, robust, transparent review than the previous reviews [11, 19, 20].

The review minimized the risk of publication bias through searching the most popular databases in healthcare field, searching the largest grey literature databases, conducting backward and forward reference list checking, using a comprehensive list of search terms, and not restricting the search to a certain year of publication, country of publication, and comparator.

To minimize the selection bias, two reviewers independently carried out the study selection, data extraction, risk of bias assessment, and quality of evidence evaluation. Interrater agreement was good for all processes, except for data extraction (which was very good). When possible, results of the included studies were meta-analyzed, and this improved the power of studies and increased the estimates of the likely size of effect of listening to the Quran on different outcomes.

4.2.2 Limitations

The intervention of interest in this review was restricted to reciting or listening to the Quran, but not other Islamic spiritual interventions (e.g., supplications, prayers, mustahab praises). Further, this review focused on mental health-related outcomes and excluded outcomes related to physiological disorders or health. Accordingly, this review cannot comment on the effectiveness of other Islamic spiritual interventions and on the effect of listening to the Quran on physiological disorders or health.

The review was restricted to RCTs written in the English language, therefore, many studies were excluded because they were quasi experiments and/or written in the Persian language. This restriction was necessary because RCTs have higher internal validity than any other study design [55] and, given the resource available, it was not feasible to translate all non-English studies.

Most included studies recruited Iranian Muslims without mental disorders. This may limit the generalizability of our findings to non-Muslims with mental disorders in other countries. The overall risk of bias was rated as high in the all included studies, and quality of evidence for all meta-analyzed outcomes ranged from very low to low. Therefore, findings in this review must be interpreted with caution.

4.3 Practical and research implications

4.3.1 Practical implications

Although this study revealed that listening to the Quran is effective in improving anxiety, depression, stress, and mental health, it is difficult to draw definitive conclusions due to high risk of bias in the included studies, low quality of evidence, and lack of studies assessing each outcome. For this reason,

health professionals and individuals should consider listening to the Quran as a complementary therapy to already available interventions for anxiety, depression, stress, and psychological well-being.

The effect of listening to Quran was smaller in studies that delivered the intervention only once [29, 37, 38] than those that delivered it more than once [30, 35]. Hence, people should consider listening to the Quran more than once to increase the effectiveness. Given that all chapters (Surah) and reciters used as an intervention in the included studies showed improvements in the measured outcomes, people should consider these chapters and reciters to improve anxiety, depression, stress, psychological well-being.

Most included studies used MP3 players delivering the intervention, and none of them used mobile applications (apps), which may be more accessible in the last decade. Thus, we encourage development and evaluation mobile apps that enable users to listen to the Quran and/ or Al-Ruqya Al-Shariya.

4.3.2 Research implications

The current review found relatively few studies assessing the effectiveness of listening to the Quran. Thus, researchers should conduct further studies to examine the effectiveness of listening to the Quran. They also should recruit non-Muslims with mental disorders from different countries given the lack such evidence.

While listening to the Quran was the intervention in all included studies, no study assessed the effect of reciting Quran by patients themselves. Further, no studies investigated the effectiveness of Al-Ruqya Al-Shariya. Accordingly, there is a need to assess the effectiveness of reciting the Quran by patients and Al-Ruqya Al-Shariya.

In most included studies, comparators were inactive intervention (i.e. no intervention). Future studies should assess the effectiveness of listening to the Quran in compassion with active interventions such as medications, music, yoga, and other spiritual or Islamic therapies.

In all included studies, outcomes were measured subjectively using self-administrated questionnaires. Therefore, participants' answers might be biased to show a positive effect of listening to the Quran given that participants were Muslims in most studies and were aware of their treatment allocation. In addition to subjective outcome measures, researchers should objectively assess outcomes using, for example, electroencephalogram (EEG) to monitor changes in brainwaves.

Given that the overall risk of bias was judged as high in the included studies, we encourage researchers to follow recommended guidelines or tools (e.g., RoB 2 [25] and CONSORT-EHEALTH [56]) when conducting and reporting their studies in order to minimize biases.

Conclusion

Listening to the Quran was significantly effective in improving anxiety, depression, stress and mental health. However, this finding resulted from low or very low quality of evidence that had a high risk of bias.

People should not consider listening to the Quran as a replacement for established mental health treatments. Instead, they should use it as an adjunct to already available interventions. There is a pressing need to develop and evaluate mobile applications that provide recitations of the Quran and Al-Ruqya Al-Shariya. Researchers should conduct further studies to compare the effectiveness of reciting and listening to the Quran and Al-Ruqya Al-Shariya with active interventions on mental disorders and psychological well-being among Muslims and non-Muslims from different countries.

Declarations

Author contributions

The protocol of this review was developed by AA, TA, MH, and BMB. The search was run by AA. The study selection and data extraction were carried out by AAM and AHM under supervision of AA & MH. AA synthesised the data and drafted the manuscript. The manuscript was revised critically for important intellectual content by all authors. All authors approved the manuscript for publication and agree to be accountable for all aspects of the work.

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Statement on conflicts of interest

The authors have no competing interests to declare.

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Abbreviations

AA: Alaa Abd-alrazaq

AAM: Ashraf Ali Malkawi

AHM: Ahmed Husni Maabreh

BDI-2: Beck Depression Inventory II

CI: Confidence interval

EEG: Electroencephalogram

EPDS: Edinburgh Postnatal Depression Scale

GRADE: Grading of Recommendations Assessment, Development and Evaluation

HADS: Hospital Anxiety and Depression Scale

HARS: Hamilton Anxiety Rating Scale

MD: Mean difference

MCAQ: Marten's competitive anxiety questionnaires

MCID: Minimal clinically important difference

P: P-value

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PSS: Perceived Stress Scale

RCT: Randomized controlled trials

RoB 2: Risk-of-Bias 2

SD: Standard deviation

SMD: Standardized mean difference

STAI: Spielberger State-Trait Anxiety Inventory

References

1. Mental Health Foundation. Fundamental Facts About Mental Health 2016. London: Mental Health Foundation; 2016. Available from: <https://www.mentalhealth.org.uk/sites/default/files/fundamental-facts-about-mental-health-2016.pdf>.
2. Mental Health Foundation. Fundamental Facts About Mental Health 2015. London: Mental Health Foundation; 2015. Available from: <https://www.mentalhealth.org.uk/sites/default/files/fundamental-facts-15.pdf>.
3. Jones SP, Patel V, Saxena S, Radcliffe N, Ali Al-Marri S, Darzi A. How Google's 'ten things we know to be true' could guide the development of mental health mobile apps. *Health Aff.* 2014;33(9):1603–11. doi:10.1377/hlthaff.2014.0380.
4. World Health Organization. The global burden of disease: 2004 update. Geneva: World Health Organization; 2008. ISBN: 9241563710.

5. Whiteford HA, Ferrari AJ, Degenhardt L, Feigin V, Vos T. The global burden of mental, neurological and substance use disorders: an analysis from the Global Burden of Disease Study 2010. *PloS one*. 2015;10(2):e0116820. doi:10.1371/journal.pone.0116820.
6. Cuijpers P, Sijbrandij M, Koole SL, Andersson G, Beekman AT, Reynolds lii CF. The efficacy of psychotherapy and pharmacotherapy in treating depressive and anxiety disorders: a meta-analysis of direct comparisons. *World Psychiatry*. 2013 2013/06/01;12(2):137–48. doi:10.1002/wps.20038.
7. Gartlehner G, Wagner G, Matyas N, Titscher V, Greimel J, Lux L, et al. Pharmacological and non-pharmacological treatments for major depressive disorder: review of systematic reviews. *BMJ Open*. 2017;7(6):e014912. doi:10.1136/bmjopen-2016-014912.
8. Gartlehner G, Thieda P, Hansen RA, Gaynes BN, DeVeaugh-Geiss A, Krebs EE, et al. Comparative Risk for Harms of Second Generation Antidepressants. *Drug Safety*. 2008 2008/10/01;31(10):851–65. doi: 10.2165/00002018-200831100-00004.
9. Cochrane Depression Anxiety and Neurosis Group. CCDAN Topic List: intervention-psychological therapies. Secondary CCDAN Topic List: intervention-psychological therapies. London: The Cochrane Collaboration; 2013.
10. Jorm A, Allen N, Morgan A, Purcell R. A guide to what works for depression: beyondblue; 2013. ISBN: 0646518127.
11. Mat-Nor MB, Ibrahim NA, Ramly NF, Abdullah Fi. Physiological and Psychological Effects of Listening To Holy Quran Recitation in the Intensive Care Unit Patients: A Systematic Review. *International Medical Journal Malaysia*. 2019;18(1).
12. AjorPaz NMB, Ranjbar N. Effects of recitation of Holy Quran on anxiety of women before cesarean section: a randomize clinical trial. *Qom University of Medical Sciences Journal*. 2010;4(1):Pe15-Pe9, En3..
13. Ajorpaz MN, Aghajani M, Shahshahani M. The effects of music and Holy Quran on patient's anxiety and vital signs before abdominal surgery. *Evidence Based Care*. 2011;1(1):63–76. doi:10.22038/ebcj.2011.3765.
14. Heidari M, Shahbazi S. Effect of Quran and music on anxiety in patients during endoscopy. *Knowledge Health*. 2013;8(2):67–70.
15. Heidari M, Shahbazi S. An Assessment of the Effect of Recitation of the Quran on Exam Anxiety in Nursing and Emergency Medicine Students. *Strides in Development of Medical Education*. 2015;12(1):56–63.
16. Jaber A, Bonabi A, Anari NT, Hasani SAR. A, P. The effect of the koran reciting on the depressed patients in psychiatry department of Moradi hospital in Rafsanjan. *HBI_Journals*. 2005;10(2):42–8.
17. 10.4103/2277-9175.114201
Ebrahimi A, Neshatdoost H, Mousavi S, Asadollahi G, Nasiri H. Controlled randomized clinical trial of spirituality integrated psychotherapy, cognitive-behavioral therapy and medication intervention on depressive symptoms and dysfunctional attitudes in patients with dysthymic disorder. *Advanced Biomedical Research*. 2013 January 1, 2013;2(1):53-. doi: 10.4103/2277-9175.114201.

18. 10.4304/jltr.3.5.1004-1008
Poura S, Rajabi S, Pishgar A. Investigating the Rate of Quran Reciting by Persian Language and Literature Students in Comparison with Students of Other Fields and Its Effect on Depression, Anxiety and Stress. *Journal of Language Teaching & Research*. 2012;3(5):1004-8. PMID: 90356318. doi: 10.4304/jltr.3.5.1004-1008.
19. Ghiasi A, Keramat A. The Effect of Listening to Holy Quran Recitation on Anxiety: A Systematic Review. *Iran J Nurs Midwifery Res*. 2018 Nov-Dec;23(6):411–20. doi:10.4103/ijnmr.IJNMR_173_17. PMID: 30386389.
20. YektaKooshali MH, Moladoust H, Pourrajabi A. The Effect of Sound of the Quran on Hygiene, Mental Health, and Physiological Functions: A Systematic Review. *Journal of Research on Religion Health*. 2019;5(1):136–47. doi:10.22037/jrrh.v5i1.19289.
21. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration. *PLOS Medicine*. 2009;6(7):e1000100. doi:10.1371/journal.pmed.1000100.
22. Adynata A, Idris I. Effectiveness of Ruqyah Syar'iyah on physical disease treatment in Riau province. *Jurnal Ushuluddin*. 2016;24(2):211–33.
23. Higgins J, Deeks J. Chapter 7: selecting studies and collecting data. In: Higgins J, Green S, editors. *Cochrane Handbook for Systematic Reviews of Interventions*. Sussex: John Wiley & Sons; 2008. pp. 151–85.
24. Altman DG. *Practical statistics for medical research*. 1 ed: CRC press; 1990. ISBN: 0412276305.
25. Sterne JAC, Savović J, Page MJ, Elbers RG, Blencowe NS, Boutron I, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*. 2019;366:l4898. doi:10.1136/bmj.l4898.
26. Copay AG, Subach BR, Glassman SD, Polly DW, Schuler TC. Understanding the minimum clinically important difference: a review of concepts and methods. *The Spine Journal*. 2007 2007/09/01/;7(5):541–6. doi: <https://doi.org/10.1016/j.spinee.2007.01.008>.
27. Deeks JJ, Higgins JP, Altman DG. Chapter. Analysing data and undertaking meta-analyses. In: Higgins J, Green S, editors. *Cochrane handbook for systematic reviews of interventions*. 9. Sussex: John Wiley & Sons; 2008. pp. 243–96.
28. Schunemann HJ, Oxman AD, Vist GE, Higgins JP, Deeks JJ, Glasziou P. Chapter 12: Interpreting results and drawing conclusions. In: Higgins J, Green S, editors. *Cochrane handbook for systematic reviews of interventions* Sussex. UK: John Wiley & Sons; 2008. pp. 359–87.
29. Babaii A, Abbasinia M, Hejazi SF, Seyyed Tabaei SR, Dehghani F. The Effect of Listening to the Voice of Quran on Anxiety before Cardiac Catheterization: A Randomized Controlled Trial. *Health, Spirituality & Medical Ethics Journal*. 2015 Summer2015;2(2):8–14. PMID: 108335170. Language: English. Entry Date: 20170612. Revision Date: 20190517. Publication Type: Article.
30. Babamohamadi H, Sotodehasl N, Koenig HG, Jahani C, Ghorbani R. The Effect of Holy Qur'an Recitation on Anxiety in Hemodialysis Patients: A Randomized Clinical Trial. *Journal of Religion &*

- Health. 2015 Oct;54(5):1921-30. PMID: 25559332.
31. Babamohamadi H, Sotodehasl N, Koenig HG, Al Zaben F, Jahani C, Ghorbani R. The Effect of Holy Qur'an Recitation on Depressive Symptoms in Hemodialysis Patients: A Randomized Clinical Trial. *Journal of Religion Health*. 2017 Feb;56(1):345–54. PMID: 27393704.
 32. Darabinia M, Heidari Gorji AM, Afzali MA. The effect of the Quran recitation on mental health of the Iranian medical staff. *Journal of Nursing Education Practice*. 2017;7(11):30–6. doi:10.5430/jnep.v7n11p30.
 33. Frih B, Mkacher W, Bouzguenda A, Jaafar H, Ben Salah SAAL Z, et al. Effects of listening to Holy Qur'an recitation and physical training on dialysis efficacy, functional capacity, and psychosocial outcomes in elderly patients undergoing haemodialysis. *Libyan Journal of Medicine*. 2017 Dec;12(1):1372032. PMID: 28891419.
 34. Hamidiyanti BYF, Pratiwi IG. Effect of Listening to the Quran on Anxiety Level in Primipara. *Health Spirituality Medical Ethics Journal*. 2019;6(1):52–6. doi:10.29252/jhsme.6.1.8.
 35. Jabbari B, Mirghafourvand M, Sehhatie F, Mohammad-Alizadeh-Charandabi S. The effect of holly Quran voice with and without translation on stress, anxiety and depression during pregnancy: a randomized controlled trial. *Journal of religion and health*. 2017:1–11.
 36. Kadkhodaei F, Mansouri A, Hajar S, Abak F, Pour B, Nehbandani S. A Comparative Study on the Effect of the Voice of the Holy Quran and Arendeshine Music on the Anxiety of the Primiparous Women of the Natural Provisional Candidate. *Asian Journal of Pharmaceutical Research Development*. 2019;7(3):31–5. doi:10.22270/ajprd.v7i3.510.
 37. Mirsane SA, Kheirkhah D, Shafagh S, Ajorpaz NM, Aminpour J. The effect of listening to Vaghe'a Surah and its translation on the state and trait anxiety before general surgeries: a Randomized Controlled Clinical Trial. *Health Spirituality Medical Ethics Journal*. 2016;3(3):12–7. PMID: 118227328. Language: English. Entry Date: 20180117. Revision Date: 20190214. Publication Type: Article.
 38. Mottaghi ME, Rohani RE. Z. Effect of Quran Recitation on the Level of Anxiety in Athletics. *Quarterly of Quran Medicine*. 2011;1(1):1–4.
 39. Rafique R, Anjum A, Raheem SS. Efficacy of Surah Al-Rehman in managing depression in Muslim women. *Journal of Religion Health*. 2019 Apr;58(2):516–26. PMID: 2017-40828-001.
 40. Gidron Y. Trait Anxiety. In: Gellman MD, Turner JR, editors. *Encyclopedia of Behavioral Medicine*. New York: Springer New York; 2013. p. 1989-.
 41. Leal PC, Goes TC, da Silva LCF, Teixeira-Silva F. Trait vs. state anxiety in different threatening situations. *Trends in Psychiatry Psychotherapy*. 2017;39:147–57.
 42. Mahjoob M, Nejati J, Hosseini A, Bakhshani NM. The Effect of Holy Quran Voice on Mental Health. *Journal of Religion and Health*. 2016 2016/02/01;55(1):38–42. doi: 10.1007/s10943-014-9821-7.
 43. Kazemi M, Ansari A, Allah Tavakoli M, Karimi S. The Effect of the Recitation of Holy Quran on Mental Health in Nursing Students of Rafsanjan University of Medical Sciences. *Journal of Rafsanjan University of Medical Sciences Health Services*. 2004;3(1):52–7.

44. Taghilou S. The effect of the Holy Quran reading instruction on stress reduction in the young and adolescents. *JOURNAL OF GUILAN UNIVERSITY OF MEDICAL SCIENCES*. 2009;18(71):72–81.
45. Shamsi M, Bayati A, Jahani F, Farhangnia L. The effect of Holy Quran recitation on perceived stress among personnel of Arak University of Medical Sciences. *Daneshvar*. 2011;19(95):35–44.
46. Ekwonye AP. Adolescent depression and social support, religiosity and spirituality in a faith-based high school: Seton Hall University; 2011.
47. Yi MS, Mrus JM, Wade TJ, Ho ML, Hornung RW, Cotton S, et al. Religion, Spirituality, and Depressive Symptoms in Patients with HIV/AIDS. *J Gen Intern Med*. 2006;21(S5):21-S7. doi:10.1111/j.1525-1497.2006.00643.x. 2006/12/01.
48. Cotton S, Larkin E, Hoopes A, Cromer BA, Rosenthal SL. The impact of adolescent spirituality on depressive symptoms and health risk behaviors. *Journal of Adolescent Health*. 2005 2005/06/01/;36(6):529. doi: <https://doi.org/10.1016/j.jadohealth.2004.07.017>.
49. Sinha JW, Cnaan RA, Gelles RJ. Adolescent risk behaviors and religion: Findings from a national study. *J Adolesc*. 2007 2007/04/01/;30(2):231–49. doi:<https://doi.org/10.1016/j.adolescence.2006.02.005>.
50. Schapman AM, Inderbitzen-Nolan HM. The role of religious behaviour in adolescent depressive and anxious symptomatology. *J Adolesc*. 2002 2002/12/01/;25(6):631–43. doi:<https://doi.org/10.1006/jado.2002.0510>.
51. Vasegh S, Mohammadi M-R, Religiosity, Anxiety, and Depression among a Sample of Iranian Medical Students. *The International Journal of Psychiatry in Medicine*. 2007 2007/06/01;37(2):213–27. doi: 10.2190/J3V5-L316-0U13-7000.
52. Zhao J, Yang X, Xiao R, Zhang X, Aguilera D, Zhao J. Belief system, meaningfulness, and psychopathology associated with suicidality among Chinese college students: a cross-sectional survey. *BMC Public Health*. 2012 2012/08/17;12(1):668. doi: 10.1186/1471-2458-12-668.
53. 10.1080/13674679908406330
Pfeifer S, Waeltly U. Anxiety, depression, and religiosity—a controlled clinical study. *Mental Health, Religion & Culture*. 1999;2(1):35. PMID: 6671967. doi: 10.1080/13674679908406330.
54. Aly HA. Spirituality and psychological well-being in the muslim community: An exploratory study: University of La Verne; 2010.
55. Bhattacharjee A. Social science research: Principles, methods, and practices: Creative Commons Attribution; 2012. Available from: <http://scholarcommons.usf.edu/>.
56. Eysenbach G. CONSORT-EHEALTH: Improving and Standardizing Evaluation Reports of Web-based and Mobile Health Interventions. *J Med Internet Res*. 2011;13(4):e126. doi:10.2196/jmir.1923. PMID: 22209829.

Figures

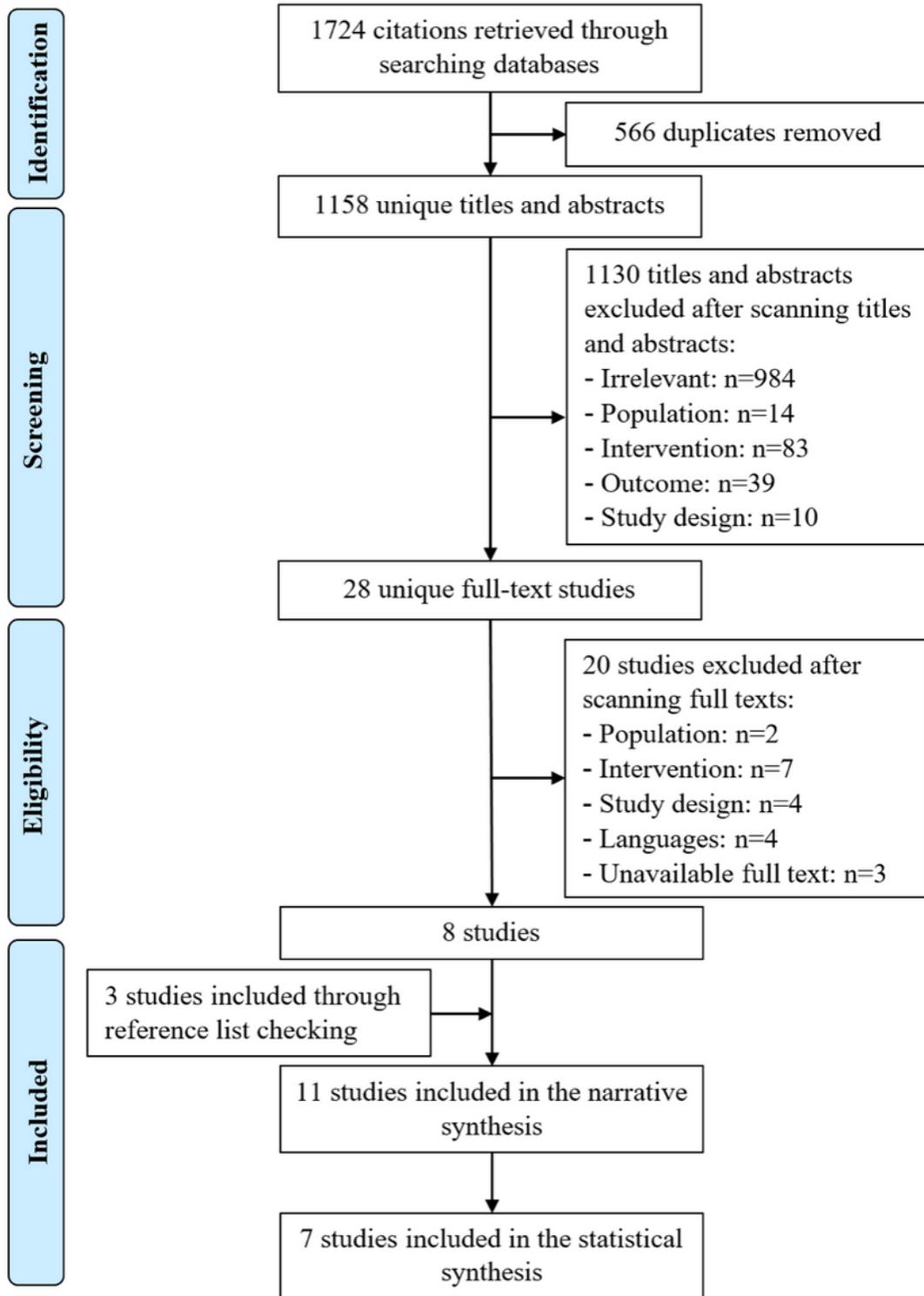


Figure 1

Flow chart of the study selection process

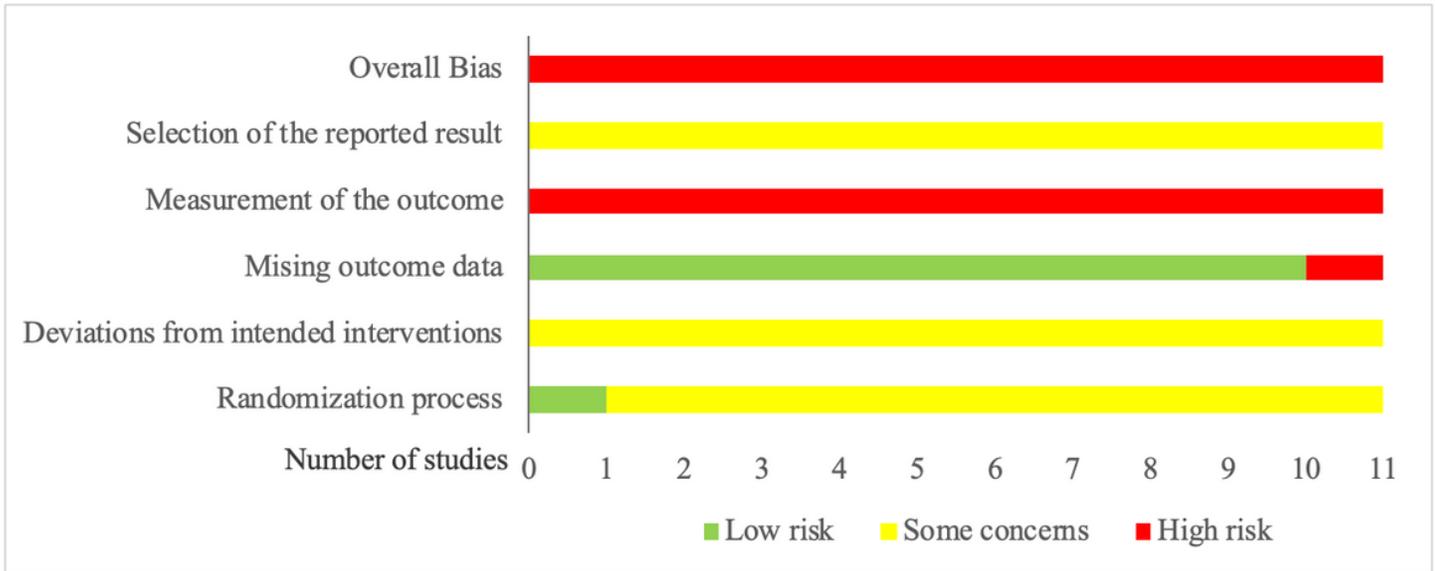


Figure 2

Review authors' judgements about each 'Risk of bias' domain.

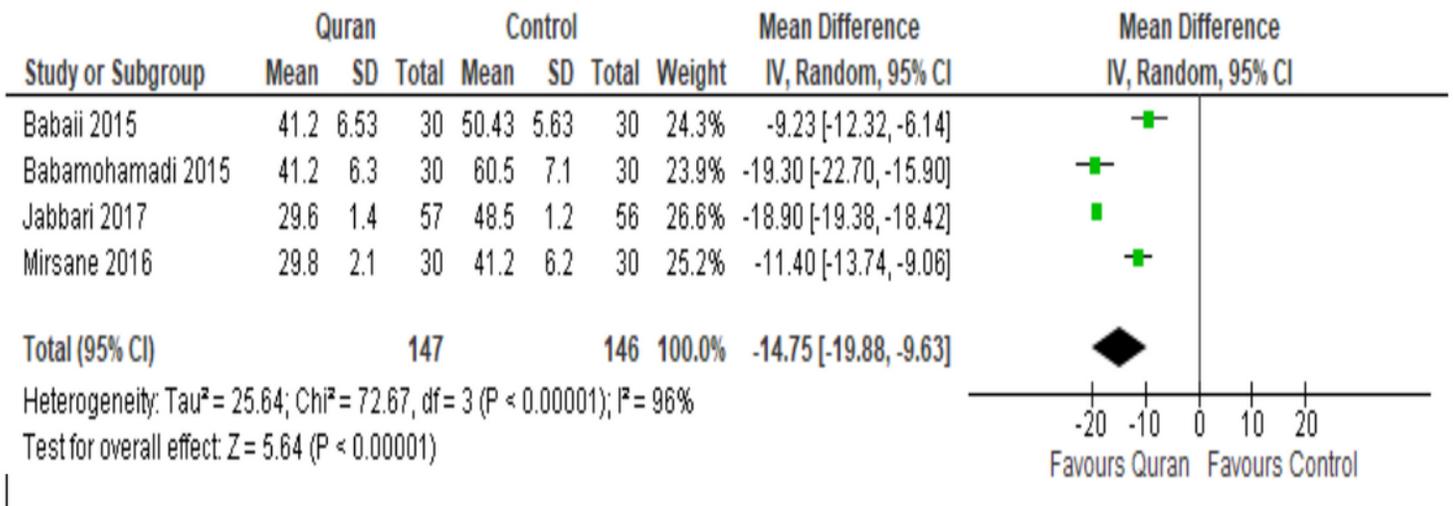


Figure 3

Forest plot of four studies assessing the effect of the Quran on state anxiety.

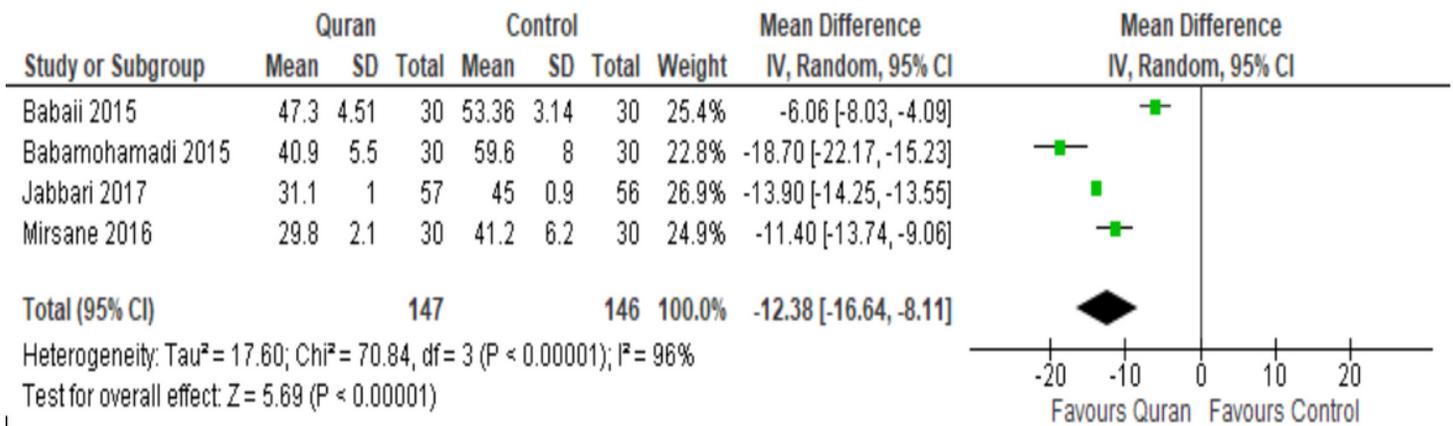


Figure 4

Forest plot of four studies assessing the effect of the Quran on trait anxiety.

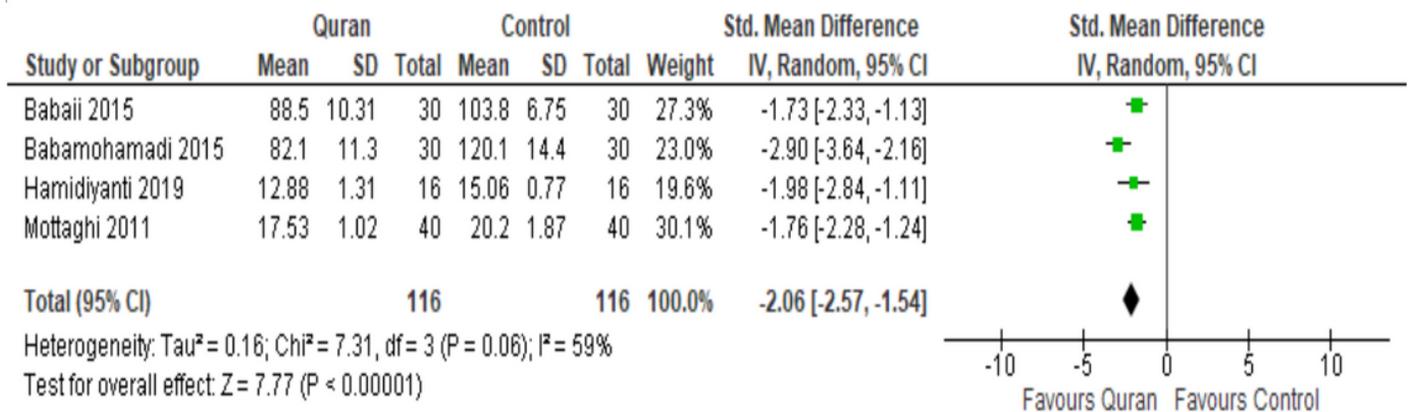


Figure 5

Forest plot of four studies assessing the effect of the Quran on general anxiety.

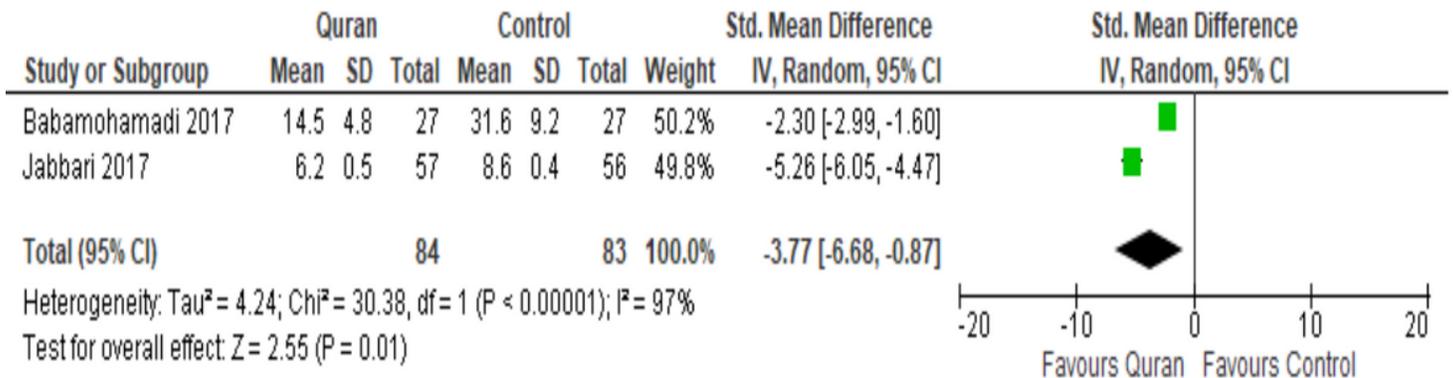


Figure 6

Forest plot of two studies assessing the effect of the Quran on depression.

Supplementary Files

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