

REVIEW ARTICLE Physiological and Psychological Effects of Listening To Holy Quran Recitation in the Intensive Care Unit Patients: A Systematic Review

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ABSTRACT

Stress and anxiety are common among intensive care unit (ICU) patients especially those who are on mechanical ventilation. Non-pharmacological interventions such as music and prayer are recommended because they are opioid sparing, easy to provide, cheap and safe. There is a growing body of evidence on the effects of Holy Quran Recitation (HQR) in reducing stress and anxiety in critically ill Muslim patients. The aim of this review is to evaluate the physiological and psychological effects of HQR specifically in ICU setting. This review was performed on articles published between 2007 and 2018. Extensive search was done using PubMed, ISI Web of Knowledge, Scopus and Google Scholar. Systematic review articles are also assessed and relevant literatures are hand searched based on reference lists and citations made in key publications. Studies related to HQR which were done outside adult ICU setting were excluded. A total of nine articles are included in the final list for detail analysis. Findings of this review revealed six studies with significant results in improving stress responses, hemodynamic stability and conscious levels. HQR is a potential non-pharmacological tool to reduce stress and can also be used as auditory stimulus to improve conscious level in comatose patients. More studies in this area are recommended aiming for low risk of bias, appropriate calculation of sample size and adequately powered to detect significant outcomes.

KEYWORDS: stress, non-pharmacological, critically ill, mechanical ventilation, Holy Quran listening

INTRODUCTION

Stress and anxiety are common among mechanically ventilated intensive care unit (ICU) patients.¹ Lusk and Lash categorised ICU stressors into psychological, treatment-related and environmental.² If left untreated, it increases the sympathetic tone and induces stress response by stimulating the hypothalamus-pituitary-adrenal axis response. Stress may impede the process of healing and complicates the weaning process, thus prolong

the period of MV and ICU stay.³ Unnecessary analgo-sedative medications may increase risk of over sedation with undesirable side-effects. As a result, 2018 Society of Critical Care Medicine Guidelines for the management of pain, agitation and delirium in the ICU recommend non-pharmacological interventions, because they are opioid-sparing, easy to provide, cheap and safe.⁴ Complimentary therapies to relieve stress, agitation and anxiety include music therapy, nature-based sound, prayer, massage and Quran listening. In a prospective randomized controlled trial (RCT) among 373 ICU patients receiving ventilator support, patient-directed music listening resulted in greater reduction in anxiety, sedation frequency and intensity compared with usual care.⁵

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Clinical trials looking at spiritual approach in dealing with the emotional problems among ICU is hardly

available. Plakas *et al* found that spiritual care which concerns with religiosity, prayer and faith to God has been used in coping with health related problems. Rath, and Anastasi & Newberg have found that listening to intercessory prayer recitation is able to enhance positive physiological changes among critically ill Christian patients.^{6,7} Whereas, Fisher introduced meditation session to reduce patients' anxiety and distress among hospitalised patients.⁸ Levin and Chatters stated that results of several studies have been consistent in indicating a salutary relationship between religious involvement and health status.⁹

There is a growing trend of studies on the effect of Holy Quran recitation (HQR) to reduce stress in hospitalised patients such as during labour,¹⁰ during hemodialysis,¹¹ prior to invasive procedures and prior to induction of anaesthesia and surgeries.^{12,13} In a recent systematic review (SR) of 28 RCTs and quasi-experiments, Ghiasi & Keramat revealed a positive effect to HQR on anxiety in various settings.¹⁴ Therefore, there is a potential role of HQR in reducing stress and anxiety in the critically ill patients. The aim of this SR is to evaluate the physiological and psychological effects of HQR among critically ill patients in the ICU setting.

MATERIALS AND METHODS

The strategy for searching related articles was using PubMed, ISI Web of Knowledge, MEDLINE, Scopus, Al-Quran & Medicine and Google Scholar. Key words and MeSH terms such as *Quran, listening, recitation, anxiety, stress, critically ill patients, ICU and Boolean operators "AND" and "OR"* were used. The search was limited to original articles available in English from January 2007 to December 2018. Abstracts of the articles were searched and only those related to Quran and ICU settings were selected. We also evaluated SR articles that discussed the effects of Quran on anxiety and health to search for potential articles. Professional journals were hand searched for relevant literatures based on the reference lists and citations made in key publications. Studies related to HQR and its effects which were done outside ICUs e.g. general wards, operating rooms, labour wards or catheter laboratories were excluded. Only clinical trials and quasi-experiments done in patients aged more than 18 years old were chosen for final analysis. The eligibility of papers that met the inclusion

criteria were discussed among reviewers and any disagreements were resolved by discussion. The following information were extracted from the articles: title, authors, year of publication, study objectives, setting, methodology, participants, assessment tools, outcome measures, key findings and conclusions. The risk of bias was assessed using the modified Cochrane Collaboration Risk of Bias Tool, which consists of selection, performance, attrition, reporting and detection bias. Each domain was assessed as a judgment of high, low or unclear risk of bias.¹⁵

RESULTS

Figure 1 summarised the flow chart used to retrieve the included articles. A total of nine out of 15 shortlisted articles were selected for a more detailed review. Six papers were excluded for the following reasons; one was a replication of another study published in a different journal, neither full article nor abstract was retrievable in two studies, one study was a conference material without full article and the last two did not use Quran verses. The final list consists of four RCTs and five quasi-experimental studies as shown in Table 1. Seven were conducted in general ICUs and the other two in coronary care ICUs. Eight studies involved mechanically ventilated patients and one without artificial ventilation at any stage. Most of the studies were conducted in Iran (n=4), followed by Malaysia (n=2), Indonesia (1), Egypt (n=1) and Saudi Arabia (1). Six studies demonstrated significant results, meanwhile the other three showed no significant findings.

Study Characteristics

The characteristics of nine articles which are selected for final analysis are summarised in Table 2. The total number of critically ill patients involved was 360. Seven studies were done in between 2017 and 2018; two were conducted in 2014 and one in 2013. Study designs were a two-arm parallel group (6) and a single-arm group (3). Three studies assessed the effects of HQR on physiological response to stress, four studies assessed the effects on vital signs and conscious level, one study on the hemodynamic changes and one study evaluated the effects on weaning from MV. The chapters used in the studies were Al-Fatehah and Yasiin (4), Al-Baqarah (2), Ar-Raad (1), Yusuf (1) and one has no documentation.

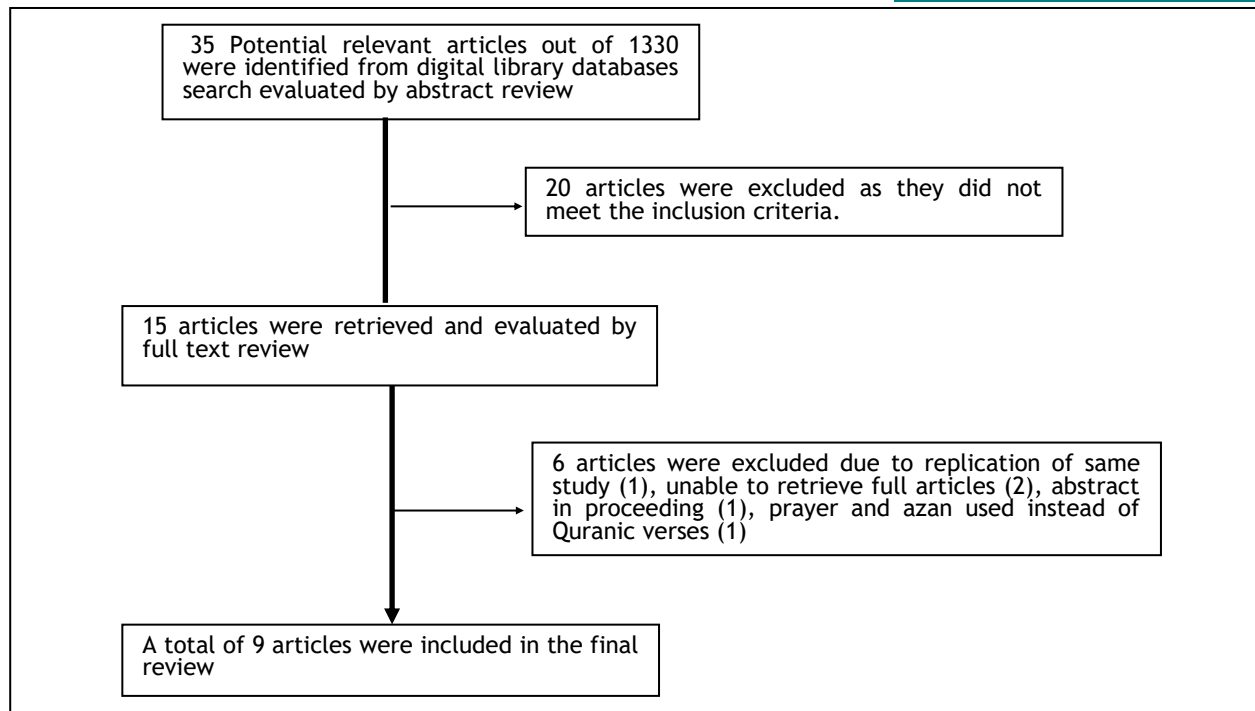


Figure 1: Flow diagram of literature search results

Holy Quran recitation in intensive care patients with no effects on clinical outcome

A total of three studies revealed no effects on clinical outcomes and all involved mechanically ventilated patients. Ariff *et al* assessed five patients in a one-arm pilot study in a coronary intensive care, looking at haemodynamic changes from Yasiin recitation.¹⁶ This is the only study utilised the 'live' voice of Quran, recited by a person at the bedside. The mean arterial pressure (MAP), pulse rate (PR), SpO₂ and ECG were not different at baseline and post-intervention. There were no strict inclusion or exclusion criteria mentioned and no documentation of control of the important confounders (e.g. inotropic support, sedation or cardiac medications) which might expose the study to bias. The study was intended to assist in constructing a methodological approach in assessing the therapeutic effect of Surah Yasiin on patients' hemodynamic. In a repeated measures quasi-experimental study, Abu Bakar alternately assigned 44 ICU patients into HQR and control groups to compare their physiological changes.¹⁷ The intervention group had a 30 minutes listening to Surah Al-Fatehah and Yasiin, and participants in both groups were located in quiet rooms. The PR, blood pressure (BP), SpO₂ and tidal volume were measured. The results showed no significant changes in MAP, systolic BP, diastolic BP and tidal volume, except in PR.

In a pilot study conducted in Saudi Arabia, Yadak randomised 55 critically ill patients into two groups during weaning from ventilator prior to spontaneous breathing trials (SBTs).¹⁸ The intervention group listened to Surah Al-Baqarah for 30 minutes, whereas the control group were put on headphones without the Quran. The physiological and weaning parameters were compared. There were no significant differences in both groups and the investigators concluded that there were no negative effects of HQR on weaning. This was the first study done to explore the possible utility of HQR in ICU patients during weaning process.

Holy Quran Recitation listening associated with better clinical outcomes

Six studies in this review showed positive effects, of these, three studies evaluated the effect of HQR on improvement of conscious levels. In a double blind RCT, Naseri-Salahshour randomized 66 patients into Quran listening and control.¹⁹ Patients included were opioids abuse, head trauma and intracerebral haemorrhages. The samples were homogenous in terms of level of consciousness and causes of coma. The intervention along with the standard care was conducted daily for ten days. They found that the level of consciousness in the intervention group increased significantly on day ten. In a one-arm study, Nasiri evaluated 30 ICU patients with GCS 8 to

Table 1: Final list of studies included in the systematic review

Title, Journal and Year of publication	Authors, Country where the research done	Outcomes, number of patients, study design
1.* The Effect of Listening to Holy Quran Recitation on Weaning Patients Receiving Mechanical Ventilation in the Intensive Care Unit: A Pilot Study. <i>J Relig Health</i> , 2017 ¹⁸	M Yadak , KA Ansari <i>et al.</i> Saudi	No difference, N=55 Clinical trial
2.* Effects Of Holy Quran Listening On Physiological Stress Response Among Muslim Patients In Intensive Care Unit. <i>J Manag Muamalah</i> , 2014 ¹⁷	SA Abu Bakar. MALAYSIA	No difference, N=44 Quasi-experimental
3.* Pilot Study on the Effect of Yasiin Recitation on the Haemodynamics of Ventilated Patients. <i>Int Med J Malaysia</i> , 2013 ¹⁶	Arif MS <i>et al.</i> MALAYSIA	No difference, N=5 Quasi-experimental
4. The effect of religious intervention on the level of consciousness of comatose patients hospitalized in an intensive care unit: a randomized clinical trial. <i>Eur J Integr Med</i> , 2018 ¹⁹	V Naseri-Salahshour <i>et al.</i> IRAN	Positive, N=66 Clinical trial
5. An Investigation into the Effect of Listening to the Voice of the Holy Quran on Vital Signs and Consciousness Level of Patients Admitted to the ICU Wards of Zabol University of Medical Sciences Hospitals. <i>Middle East J Fam Med</i> , 2017 ²⁰	AA Nasiri, H Shahdadi <i>et al.</i> IRAN	Positive, N=30 Clinical trial
6. The Effect Of Holy Quran Recitation Sound On Vital Signs And Arterial Oxygen Pressure Of Unconscious Patients Hospitalized In ICU. <i>IAJPS</i> , 2017 ²²	R Mirzaeian <i>et al.</i> IRAN	Positive, N=20 Quasi-experimental
7. The Effect of Listening to Quran on Physiological Responses of Mechanically Ventilated Muslim Patients. <i>IOSR J Nurs Heal Sci</i> , 2017 ²¹	MM El-Hady and NA Kandeel EGYPT	Positive, N=60 Quasi-experimental
8. Effect of Comfort Care Integrated with the Holy Qur'an Recitation on Comfort of Muslim Patients under Mechanical Ventilation: A Pilot Study. <i>Med Surg Nurs J</i> , 2017 ²³	JS Rustam, W Kongsuwan <i>et al.</i> INDONESIA	Positive, N=10 Quasi-experimental
9. The Effect of Simultaneous Aromatherapy and Quran Recitation on Anxiety Level of Patients with Myocardial Infarction. <i>Complement Med J</i> , 2014 ²⁴	Z Najafi , Z Tagharrobi <i>et al.</i> IRAN	Positive, N=70 Clinical trial

Legend: * The articles demonstrated no significant results.

10 after listening to Surah Yusuf for 15 minutes daily for ten consecutive days.²⁰ Patients included must not receive intravenous sedation, no bleeding or neurosurgery in temporal region, no history of brain damage and no drug addiction. There were significant differences observed in the vital signs comprising of BP, HR and respiratory rate before and after intervention, with also significant improvement in the level of consciousness before and after intervention. In the Egypt study, El-Hady included 60 patients from trauma ICUs with GCS of 9 to 12 and stable hemodynamic from three different hospitals.²¹ The study design was quasi experimental, and Surah Al-Baqarah was played for 60 minutes in the intervention arm (N=30). James adaptation of GCS was used to assess the level of consciousness. There were significant differences in vital signs as compared to control group but most

importantly, there was also a significant increase in GCS and pupil reaction to light immediately after listening to Quran.

Mirzaeian investigated the effects of Quran recitation as a tranquilizer on vital signs and arterial oxygen pressure in 20 unconscious ICU patients.²² The Quran group listened to Surah Yasiin daily via MP3 recorder and headphones for four weeks. After interventions, mean BP and arterial oxygen pressure had significant differences compared to baseline. In a pilot study conducted in Indonesia, 10 critically ill patients on MV from two ICUs were recruited. Surah Al-Fatehah and Surah Yasiin were played for 15 minutes for three days.²³ This was a single arm quasi experimental pretest-posttest study. Modified version of shortened general comfort questionnaire (SGCQ) was used to evaluate comfort. The mean

score of SGCQ was increased significantly after receiving the comfort care integrated with Al-Quran. The last study that showed positive results in this review examined the effect of both HQR and aromatherapy in patients with acute myocardial infarction in a coronary ICU.²⁴ Seventy patients were randomized equally into case and control groups. Quran recitation was played four times a day for two days and Spielberg anxiety questionnaire (SAQ) was used to measure anxiety level. There was statistical difference in the SAQ mean score between case and control groups after intervention in every four cycle.

Risk of bias in included studies

Figure II summarised the ‘Risk of bias’ of all included studies. From the nine trials included in the study, three were RCTs. However, only Naseri-Salahshour¹⁹ reported details of randomisation method used while none was mentioned for Yadak and Najafi.^{18,24} There were steps taken in these studies to provide allocation concealment and blind the participant and outcome assessors making them again the only three considered low risk for allocation concealment. In the studies by Nasiri²⁰ and Mirzaeian²² we were not able to assess selection, performance and attrition bias. Rustam²³ and Ariff¹⁶ used relatively small samples but most studies were judged to have a low risk of bias for incomplete outcome data, having no or minimal

participant losses. Most studies included were free of selective outcome reporting and other potential sources of bias

DISCUSSION

There are limited numbers of clinical trials looking at the evidence of physiological and psychological effects of HQR in critically ill patients. Nine articles are included in the final analysis; of which eight included mechanically ventilated patients and majority of the studies were conducted in Iran. Four of them assessed HQR as non-pharmacological tool to reduce stress; three studies assessed its effects on conscious level and two studies on haemodynamic parameters of coronary care patients. Even though six of them showed promising results, it is difficult to draw conclusion due to following reasons; flaws in methodologies, inadequate power and calculation of sample size and unclear implementation of RCT process on steps to reduce bias in order to ensure the quality of the study outcome.

The understanding of the meaning of Quran may influence the results of the study. Based on this argument, the results would be different if it was conducted in non-Arabic speaking patients. Jabbari *et al* randomised 168 pregnant women into three groups; one listened to Quran recitation with translation, one listened to Quran without

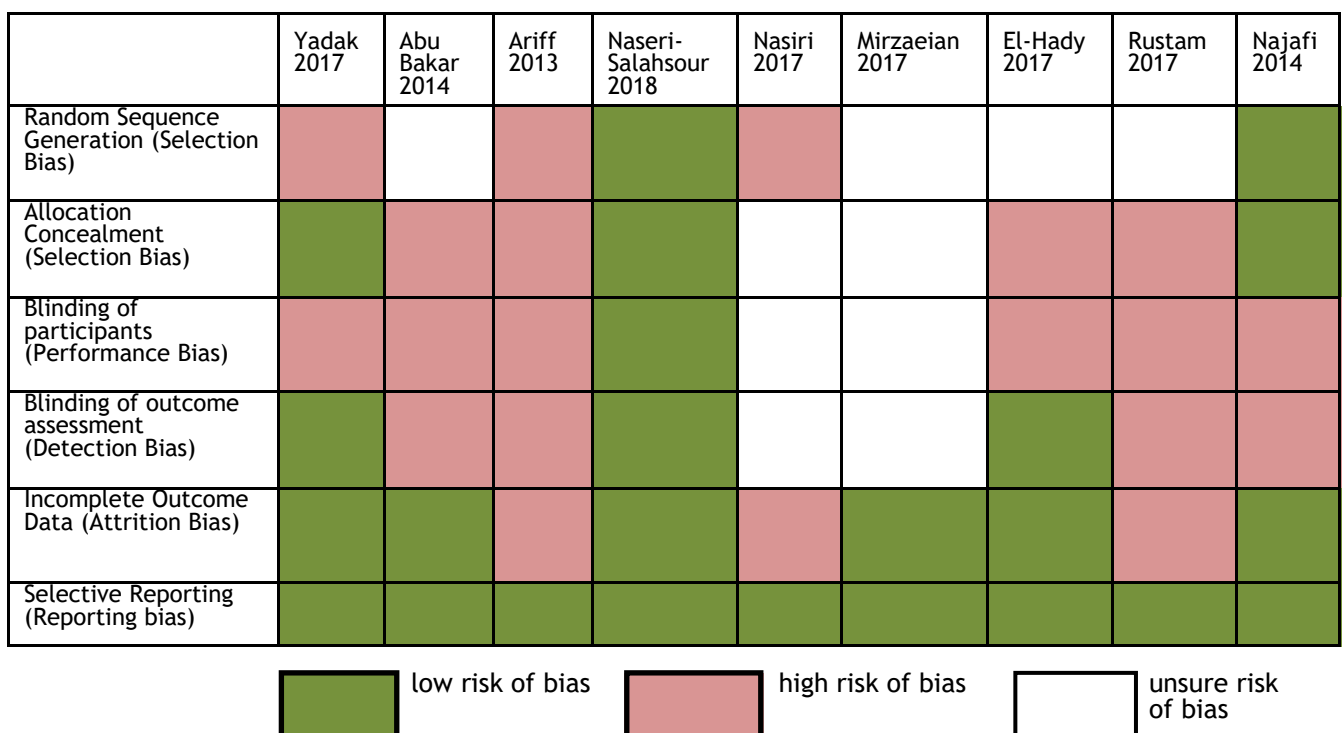


Figure 2 : “Risk of bias” summary of included studies

translation and these were compared with a control group.²⁵ This study confirmed that listening to HQR with or without translation was effective in alleviating intensity of stress, anxiety and depression. Since music therapy has been proven empirically as an effective complimentary therapy in critically ill patients, the calmness and relaxation effects of HQR could be due to the melodious voice of the sounds of Quran. Nakhavali & Seyedi mentioned that the poetic contents and rhythmic recitation of Quran are pleasing to the ear of each listener, even to unaccustomed and non-Arabic persons.²⁶ However, Mahjoob *et al* found that there were positive effects on mental health even if the Quran was recited without its musical tone.²⁷ Momtahan *et al* wrote “one of the aspects of the Quran which has been little studied is the miracle which lies in its music and phonetic order”. The effects that arise from Quran recitation come from the structure rather than the content, with its sound, words and pleasant music rather than from meanings and valuable content incorporated in it.²⁸ The chapters chosen may play an important role in the local community of the population studied. According to previous studies, surah al-Fatehah and Yasiin, is regarded as an infallible aid in healing and it has been used widely in Malay-Muslim for incantation by most Malay-Muslim Islamic Healer.²⁹

A few studies looked at the effects of HQR and music on electroencephalogram (EEG). The analysis of the results showed that listening to HQR in healthy volunteers can generate alpha waves which promote relaxation as compared with resting and listening to music.^{30,31} Zulkurnaini *et al* investigated and compared listening to Quran with classical music on EEG before, during and after interventions. Significant alpha band increment in the Quran group (12.67% vs. 9.96%) prompted them to conclude that Quran listening is more relaxing than classical music.³²

The beneficial effects of auditory stimulation on enhancement of consciousness were emphasized in some studies.^{28,33,34} Three studies in this current review supported the evidence that auditory stimulation by Quranic sound could improve the level of consciousness of comatose patients. Disorders of consciousness are characterised either by alteration in the level or by content of consciousness. Since hearing is the strongest sensation of the five senses and the last sensation that is lost in comatose patients, Quranic voice can

be used to provide the spiritual needs of hospitalised Muslim patients. Oh *et al* carried out a study “on the impact of stimulus on improving comatose patients” and found that at least two weeks was required for the onset of sensory stimulation impact.³⁵ Studies (5) and (6) played the Quran 15-17 minutes daily for ten days and Mirzaeian²² played Quran 15 minutes daily for 4 weeks, to observe progressive improvement in conscious levels. Mirzaeian also showed positive effects of auditory stimulus through HQR on haemodynamic and vital signs stability in unconscious patients.

There are some limitations of the studies above. The ideal settings for HQR listening in ICU were difficult to achieve because the researchers had to eliminate noise as another auditory stimuli even when headphones were used. The sources of noise could be either operational or structural.³⁶ ICU noise levels should ideally be measured and patients are isolated in quiet rooms¹⁷ during intervention period. The use of noise cancelling headphones can be as good as music in reducing stress. In a RCT by Chlan *et al*, among ICU patients receiving ventilator support, patient-directed music resulted in greater reduction in anxiety compared with usual care, but not compared with noise-cancelling headphone groups.⁵

Furthermore, confounders that may increase or decrease the value of vital signs such as effects of vasopressors, drugs, non-resolving acute illness and sepsis should be minimised in the study design. Most of the studies did not compare the SOFA, baseline APACHE II or SAPS II scores to quantify severity of illness. These baseline indicators should be evaluated prior to the intervention as they may influence the observed physiological parameters. Ideally, sedatives must be kept to a minimum so that attentiveness towards HQR intervention may be optimised. Other forms of medical procedures such as endotracheal tube suctioning, should also be minimised. Yadak included critically ill patients who were ready for SBTs.¹⁸ Patients who were ready for SBT usually would have fulfilled weaning criteria, achieved clinical cure and recovered from underlying acute illness. They were also more alert, and free from sedative agents or vasopressors. These conditions were quite ideal when comparing the physiological effects of HQR between experimental and control groups. Additional

biomarkers such as procalcitonin could be measured to rule out the presence of bacterial sepsis. For the benefits of the future study, a more prolonged period of Quran intervention is recommended in order to yield more effective results. Other aspects to explore include the effects of familiarity of the surah, the freedom to choose favourite surah, recitation of the surah by familiar voice of family members²⁸ and monitoring of changes in brainwaves by using EEG.

CONCLUSION

There is growing body of evidence that spirituality is an essential component of patient care in the ICU. Clinical trials on the effects of HQR in critically ill patients are quite challenging to perform since it is

difficult to quantify the effects of physiological parameters while separating the possible influence of confounding factors. Our review reveals that the research in this area is scarce; however the evidence of HQR listening as a potential non-pharmacological tool to reduce anxiety and stress in Muslim ICU patients is increasing. In addition, HQR may be used as auditory stimulus in comatose patients in an attempt to improve their conscious level. We recommend more clinical trials should be conducted in future; aiming for low risk of bias, appropriate calculation of sample size and adequately powered to detect significant outcomes. Meanwhile, HQR listening is a safe, widely available and cheap intervention that may be included as a complementary therapy for anxiety in critically ill patients to achieve improved outcome.

Table 2: Characteristics of Included Studies

	First author, Publication year	Type of study, Population and sampling	Intervention and comparison	Tool	Assessment	Findings and Conclusion
1.	Yadak M <i>et al.</i> 2017 ¹⁸	Design: Pilot study, RCT, two arms. 2015-2016 Mechanically ventilated patients, during weaning Calculated sample size: 94	55 patients Case: N=32, MP3 Quran via headphones for 30 mins Control: N=23, Headphones with eyes closed, ipod off.	Surah Al-Baqarah	Clinical parameters: RR, HR, SpO2, ETCO2, BP Monitoring: at baseline, 5 minute intervals during intervention and 5 min after completion. Weaning parameters: RBSI, NIF, PS level, VT	Findings: No significant difference between 2 groups This findings suggest no negative effect of HQR on weaning patients from MV in the ICU
2.	SA Abu Bakar. 2014 ¹⁷	Design: Repeated measures quasi-experimental, two arms in ICU patients on MV Sample size: Not calculated	44 ICU patients Case: N=22 , Control N=22 Conducted after all ward rounds done, resting environment. Doors closed, lights dimmed and staff informed. Patients were instructed to close eyes	Al-Fatehah and Yassin. MP3 recorder. 30 mins session	Physiological: HR, BP, RR. And Respiratory: SpO2, VT, RR Monitoring: at baseline, 5 minutes interval and 5 minutes after the intervention completed.	Pretest-posttest score mean differences comparison showed no significant differences in HR, sBP, dBP, MAP and RR. The intervention group experienced no reduction in physiological response except in HR. Conclusion: HQR not significantly effects except in HR.
3.	Ariff MS <i>et al.</i> 2013 ¹⁶	Design: Pilot study, one arm, quasi-experimental of CCU patients on MV Sample size: Not calculated	Yasiin recited twice. First by the researcher, followed by relative.	Yasiin	Mean blood pressure, HR, SpO2, ECG changes. Monitoring: at baseline and during intervention at 5 minutes interval	The hemodynamic parameters were not significantly affected by Yassin recitation. Conclusion: Further studies and refinements of methodology.

First author, Publication year	Type of study, Population and sampling	Intervention and comparison	Tool	Assessment	Findings and Conclusion
4. V Naseri-Salahshour <i>et al.</i> 2018 ¹⁹ Objective: To determine the religious intervention on the level of comatose patients.	Design: RCT, single centre. Population: ICU patients, on MV homogenous in term of level of consciousness and coma. GCS 3-5, recruited 48h after hospitalization. Sample size: Not calculated	66 comatose patients Case: Quran N=33, for 17 minutes daily for 10 days. Control: N=33 (MP3 and headphones but no quran) Inclusion: severe change in the shape of face, opioid poisoning, head trauma, intracerebral haemorrhages. Exclusion: patients discharged before 10th day, transfer to another health centre, surgery after first 24h, death and hearing impairment	Surah Raad GCS scale	Level of consciousness i.e. GCS components eye opening, verbal response, motor response GCS measured before and after intervention	After 10 days, the level of consciousness in the intervention group increased significantly (P=0.01), the increase in level of consciousness in the control group after intervention (10 days) was not significant (P=0.09) Conclusion: Quran can improve the level of comatose patients.
5. AA Nasiri <i>et al.</i> 2017 ²⁰ Objective: To investigate the effect of Quran on vital signs and voice of the Quran on vital signs and level of consciousness	Design: Single centre, Quasi-Elemental, single arm. Population: ICU patients without history of brain damage, recruit at least after 24h of stabilisation. Sample size: not calculated	30 ICU patients HQR Surah Yusuf 15 minutes daily for 10 days Exclusion: critical change in hemodynamic or death before 10 th day	Surah Yusof, MP3 recorder via headphones	Physiological: BP, RR, HR Consciousness level Monitoring: 5 minutes prior and immediately after completion.	Significant differences were observed (p <0.0001) BP, RR and HR declined after intervention. There was a significant difference between the level of consciousness before and after the intervention (p<0.0001).
6. R Mirzaeian <i>et al.</i> 2017 ²² Objective: To investigate the effect of HQR as a tranquilizer on vital signs and arterial oxygen pressure on unconscious patients.	Design: Quasi-experimental pretest-posttest study, two hospitals, two arms Population: ICU patients who were almost homogenous in terms of consciousness level and cause of coma. Sample size: not calculated	20 patients Case: HQR for 15 minutes daily for 4 weeks. Control: Not mentioned	Yasiin played by MP3, via headphone	BP, HR, RR, body temperature Arterial oxygen pressure (No A-a gradient or PF ratio) Monitoring: Measured in both groups before and after intervention.	The mean sBP [P=0.04] and dBp [P=0.05], HR [P=0.001] and arterial oxygen pressure [P=0.04] had significant differences in comparison with before intervention. The difference was not statistically significant for RR and temperature. Playing the HQR led to the balance in blood pressure and arterial oxygen pressure of patient

First author, Publication year	Type of study, Population and sampling	Intervention and comparison	Tool	Assessment	Findings and Conclusion
7. MM El-Hady <i>et al.</i> 2017 ²¹ Objectives: To determine the religious intervention on the level of comatose patients.	Design: single centre, Quasi experimental. Two arms. Feb 2014-July 2014 Population: 3 trauma ICUs from 3 university affiliated hospitals on MV for at least 72 h, GCS 9-12 on first day, stable hemodynamic. Exclusion: deaf, on muscle relaxant. Sample size: Not calculated.	60 trauma patients on MV Case: N=30, HQR for 60 minutes Control: N=30 - rest in bed for 60 minutes	Quran: Al Baqarah James adaptation of GCS	Physiological: HR, RR, BP, CVP, SpO ₂ , Monitoring: Parameters taken at baseline, then immediately after, 10, 20, 30 minutes post intervention. JGCS, pupil size, and pupil reaction	Significant differences of HR, RR, BP and use of accessory muscles in intervention group. Significant increase in GCS and pupil reaction to light immediately after listening to Quran (Mean ± SD 12.86±0.68) HQR is an effective intervention for improving hemodynamic, respiratory functions and level of consciousness.
8. JS Rustam <i>et al.</i> 2017 ²³ Objectives: To determine the effects of comfort care integrated with HQR on comfort in muslim patients on MV	Design: Pilot study, quasi-experimental study, single arm, pretest-posttest. Two public hospitals from Dec 2016 to Feb 2017. Population: 10 ICU patients on MV, >18 yo, fully conscious, no hearing problem, hemodynamic stable, no mental disorders. Exclusion: receiving continuous sedation, IV analgesics Sample size: not calculated	Single arm of 10 ICU patients on MV HQR for 15 minutes daily for 3 days	Quran: Surah Al Fatihah and Yassin by MP3 via headphones. Modified version of shortened general comfort questionnaire (SGCQ) to evaluate comfort	Mean score of each context of comfort: physical, psychospiritual, environmental and sociocultural	Mean score SGCQ increased significantly after receiving the comfort care integrated with Quran. The mean score of each context also increased significantly post-intervention.
9. Najafi Z <i>et al.</i> 2014 ²⁴ Objectives: To investigate the effect of simultaneous aromatherapy and quran recitation on anxiety levels of patients with myocardial infarction	Randomized controlled trial, single centre, two arms Population: 70 critically ill patients in coronary ICU Not on MV Sample size: not calculated.	Case: N=35; Quran recitation and lavender aroma therapy. HQR 4 times per day for 2 days. Control: N=35; no intervention	Quran recitation Lavender aroma Spielberger anxiety questionnaire (SAQ)	Anxiety level: at beginning and end of intervention cycle.	Significant differences in SAQ score of experimental group and control group after intervention in every four cycle. Simultaneous aromatherapy and Quran recitation reduces the anxiety level of patients suffering from myocardial infarction; hence it can be used as a useful technique in reducing anxiety.

Legend: HQR=Holy Quran recitation, RCT=randomised controlled trial, RBSI=rapid breathing shallow index, NIF=Negative inspiratory force, PS=Pressure support, VT=tidal volume, CCU=coronary care unit, MV=minute ventilation, HR=heart rate, SBP=systolic Blood Pressure, dBP=diastolic blood pressure, MBP=mean blood pressure, RR=respiratory rate, GCS=Glasgow coma scale.

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