

The Effect of Listening to Al-Quran Recitation among Uncontrolled Hypertensive Muslim Patients Attending Primary Care Clinic in Kelantan, Malaysia: A Randomised Control Trial

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ABSTRACT

INTRODUCTION: Prevalence of hypertension in Malaysia has been increasing over the years. Despite varieties of treatment, a large proportion of hypertensive patients still have uncontrolled blood pressure. Several non-pharmacological approaches have been used as non-pharmacological management to reduce blood pressure. This study intended to determine the effect of listening to Quran recitation on blood pressure among Muslim patients with uncontrolled hypertension. **MATERIAL AND METHOD:** This study was a randomized controlled trial involving 202 Muslim patients with uncontrolled hypertension. They were randomly allocated to either listening to Quran recitation group or control group. Blood pressure (BP) and heart rate were measured at baseline and after the intervention. **RESULTS:** In the intervention group, the mean changes in systolic BP and diastolic BP were -5.9 and -3.8mmHg respectively while for heart rate was -4.06 bpm. In the control group, the mean changes in systolic BP and diastolic BP were -1.68 and -1.84 mmHg respectively while for heart rate was -1.39 bpm. ANCOVA analysis showed that the mean changes in systolic blood pressure, diastolic blood pressure and heart rate between intervention and control group were statistically significant (P values = 0.001). **CONCLUSIONS:** This study showed a reduction of blood pressure immediately after listening to Quran recitation. However, a longer study on listening to Quran needs to be done to show a sustained decrease of BP of the patient.

Keywords

Hypertension, blood pressure, Quran, religiosity, Islam

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INTRODUCTION

The prevalence of hypertension in Malaysia has shown an increasing trend.¹ According to the Malaysian National Health and Morbidity Survey (NHMS) 2019, the prevalence of hypertension in adults ≥ 18 years was 30.0%.² A local study in a primary care clinic showed that only about half of the patients with hypertension had their blood pressure under control.³

The pathogenesis of essential hypertension is complex and multifactorial. Among the proposed mechanisms is

increased sympathetic nervous system activity in relation to exposure to stress.⁴ The management of the blood pressure among hypertensive patients can be divided into pharmacological and non-pharmacological approach. For non-pharmacological management, a variety of therapies have been investigated as methods to treat hypertension. Music, yoga and relaxation therapy are among non-pharmacological therapies that have been studied.⁵⁻⁸ The use of mind-body therapy (MBT) which includes meditation, relaxation, hypnosis and stress management

as a complementary approach in the management of hypertension is increasingly popular. Some meditation practices are developed within religious and spiritual contexts. For Muslim patients, the element of meditation is gained through religious practices such as *zikr* (chanting words to praise God), prayer, reading and listening to the Quran.

Studies have been done for many years to examine the association between religiosity and a person's well-being or health. A meta-analysis of nearly 350 studies of physical health and 850 studies of mental health that used religious variables found that religious involvement was associated with better health outcomes.⁹ Yucel in his doctoral dissertation stated that prayer holds an important role in the life and recovery process of Muslim patients.¹⁰ He also found that a higher level of religiosity was associated with better psychological health. A systematic review by Levin and Vanderpool showed a significant association between religiosity and blood pressure. Several studies have found that higher level of religiosity is related to lower blood pressure.¹¹

For Muslims, Quran recitation is a part of religious activities that is widely practiced. It is a practical and convenient practice as it does not require special preparation, attire (unlike praying), easy, low cost, non-invasive, non-risky to patients and it can be done anywhere at any time. Since there is substantial evidence on the positive effect of religious approach in managing chronic disease, it is worth to study the effect of one of the common practices among Muslims which is listening to Quran recitation on blood pressure. It may be used as an adjunctive therapy in managing Muslim patients with hypertension. Therefore, this study aimed to determine the immediate outcome of Quran recitation on blood pressure among uncontrolled hypertensive Muslim patients attending Primary care Clinic.

MATERIALS AND METHODS

This study was a randomized controlled trial involving hypertensive Muslim patients attending a primary care clinic in a teaching hospital in Malaysia. Sample size calculation were done using Power and Sample Size

Calculation software for comparing two means with 20% drop out, power of 90% and 1: 1 ratio is 101 per group.¹² Thus, the total sample size for the study is 202.

Patients between the age of 18 to 65 years old, diagnosed with hypertension for at least one year and with systolic blood pressure of more than 140mmHg and/or diastolic blood pressure of more than 90mmHg were included in the study. Patients with secondary hypertension, systolic blood pressure of more than 180 mmHg and/or diastolic blood pressure of more than 110mmHg, irregular pulse/any arrhythmia, psychiatric disorder and hearing problem were excluded from the study.

Research tool

Belief in Al-Quran and Health Questionnaires

The original questions were based on an article that investigates the effect of prayer and relaxation technique in patient underwent cardiac surgery.¹³ There are nine questions designed to assess the degree of participant's belief on Al-Quran and health. These questions aimed to assess on how much they believe that Al-Quran can affect someone's health. This questionnaire was translated by two bilingual persons. The content and comprehensiveness were validated by a Family medicine Specialist and bilingual English teacher. A pilot study was conducted among 30 patients at health clinic in Kota Bharu, to assess the reliability of the questionnaires showed a Cronbach α of 0.87. None of the items were eliminated. These questions were not used to evaluate the degree of religiosity of the participant. A Likert scale was used, and all questions have five possible answer options scored from 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. The total scores of nine questions were at the range of 9 to 45. The higher the score represent the higher belief that Al-Quran give positive effect on their health physically and mentally.

Data collection procedure

Prior to selection, all participants were explained regarding the procedure and consent was obtained in hard copy

document. The participants were ensured to have a rest for at least 15 minutes before the first blood pressure was measured. It was also ensured that they did not take any caffeine, herbal medicine or exercise 30 minutes prior to enrolment. OmronT8 brand electronic blood pressure machine was used. This brand is listed in the Malaysian Ministry of Health as a validated machine to be used in a clinical setting in Malaysia.¹ The machines were properly validated, maintained and regularly recalibrated according to the manufacturers' instruction by a maintenance technician.

Blood pressure was taken according to the technique as described in the Malaysian Clinical Practice Guidelines for Hypertension, 2018.¹ Blood pressure (pre) was taken by a research assistant (RA 1) who was blinded to the group that the patients were randomised to. Blood pressure and pulse rate were taken twice, 5 minutes apart. The lower blood pressure and its heart rate of the two readings were taken as the pre-intervention blood pressure.

Patients were then required to fill the social demographic data questionnaire. Data regarding hypertension and current medical medication obtained from patient's report folder. Height and weight measured to get the body mass index (BMI) calculation. The above data including the pre intervention reading of blood pressure and heart rate were documented in case report form.

Patients with blood pressure readings of systolic more than 140 mmHg and/or diastolic more than 90 mmHg were selected to be included in the study. The patients were then given an envelope to be randomised into either listening to the Quran recitation group or the control group. Computer-generated block randomisation with a block size of four was used to randomly allocate the patients to either listening to the Quran recitation group or the control group. A second research assistant (RA 2) assisted the patient to follow the prescribed activity according to the protocol.

Both groups were brought to a different room. The room has no background noise, no chatting, no discussing and other interferences are allowed. Participants in the

intervention group listened to the Quran recitation in an MP3 audio format using a headphone for 30 minutes. They were given the freedom to choose the verses and reciters that they preferred to listen to. Besides listening to the Quran recitation, the participants were also given a copy of the Quran with Malay (native language) translation. For the control group, they were asked to rest and provided with a non-religious material such as books and magazines for them to read for 30 minutes. The use of a mobile phone was prohibited in both groups to avoid distractions. Both sessions in the intervention and control lasted for 30 minutes.¹⁴ After each session, their blood pressure and pulse rate were measured twice, five minutes apart and the lower blood pressure and its heart rate were taken as the post-intervention reading. These measurements were done by RA 1. The participants then went to see the respective doctor for their usual follow-up and consultation.

Analyses were done by using SPSS for windows version 20.0. Independent t-test was used to analyse numerical data and Chi-Square test was used to analyse categorical data. Independent t-test was used to determine the difference in blood pressure and heart rate between intervention and control group at the initial of visit. Paired t-test was used to compare the difference within the group for baseline and post-intervention data. ANCOVA analysis was used to compare the mean difference of systolic blood pressure, diastolic blood pressure, and pulse rate between intervention and control group. The level of statistical significance was set at 0.05.

RESULTS

There were 202 participants enrolled in the study with an equal number in the intervention and control group. All participants who fulfilled the criteria consented for the study. There was no withdrawal from the study.

Table 1 shows the socio-demographics for both intervention and control group. There was no significant difference in all parameters except educational level.

Table 1: Socio-demographic of the participants

Variables	Intervention group n (%)	Control group n (%)	p value
Age (years)	54.2(6.6) ^c	54.0(5.7)	0.784 ^a
Sex			
Female	52(51.5)	54(53.5)	0.778 ^b
Male	49(48.0)	47(46.5)	
Marriage			
Married	91(90.1)	85(84.2)	0.207 ^b
Single/Widow/ Widower	10(9.9)	16(15.8)	
Occupation			
Working	52(51.5)	53(52.5)	0.888 ^b
Not working	49(48.5)	48(47.5)	
Income (RM)	1758(1234.73) ^c	1722(1107.90) ^c	0.826 ^a
Education			
Primary	28(27.7)	11(10.9)	0.002 ^b
Secondary and above	73(72.3)	90(89.1)	
Religious Education			
Yes	16(15.8)	20(19.8)	0.462 ^b
No	85(84.2)	81(80.2)	
Body mass index (kg/m ²)	22.9(3.09) ^c	23.2(4.62)	0.539 ^a
Duration of hypertension (years)	5.7(3.01) ^c	5.3(2.59)	0.283 ^a
Number of anti- hypertension medications	1.4(0.48) ^c	1.5(0.50)	0.120 ^a
Interval of last anti- hypertension taken (hour)	3.8 (3.12)	3.7 (2.83)	0.865 ^a
Smoking status			
Yes	13(17.8)	18(17.8)	0.329 ^b
No	88(87.1)	83(82.2)	
Score on level of belief to Al-Quran and Health	40.8(4.47)	39.9(4.30)	0.155 ^a

^aIndependent t-test^bChi-square test^cmean (SD)

Table 2 shows baseline blood pressure and pulse rate between intervention and control group. There was no significant difference between intervention and control group in systolic blood pressure (SBP), diastolic blood pressure (DBP) and pulse rate.

Table 2: Blood pressure and pulse rate between intervention and control group

Variables	Intervention group Mean (SD)	Control group Mean (SD)	p value ^a
Systolic BP	154.7 (9.27)	155.1 (9.30)	0.756
Diastolic BP	93.6 (9.32)	91.7 (7.62)	0.114
Pulse Rate	83.4 (9.28)	85.3 (5.64)	0.074

^aIndependent t-test

Table 3 shows the immediate outcomes of the intervention. There is statistically significant difference in post-intervention systolic blood pressure, diastolic blood pressure and pulse rate compared to that of the control group.

Table 3: Mean (SD) and outcomes between intervention and control group

	Intervention group				Control group				Adjusted mean changes (95% CI)	p- value ^b
	Mean (SD)	Change (95% CI)	p- value ^a		Mean (SD)	Change (95% CI)	p- value ^a			
Systolic blood pressure (mmHg)	154.7 (9.2)	148.8 (8.61)	5.92 (5.2, 6.8)	0.001	155.1 (9.29)	153.4 (9.50)	1.68 (1.2, 2.2)	0.001	4.3 (3.3, 5.2)	0.001*
Diastolic blood pressure (mmHg)	93.6 (9.33)	89.8 (8.68)	3.76 (3.2, 4.3)	0.001	91.7 (7.62)	89.8 (7.67)	1.84 (1.3, 2.3)	0.001	1.9 (1.1, 2.7)	0.001*
Pulse rate (beat/minute)	83.4 (9.28)	79.3 (9.41)	4.06 (3.4, 4.7)	0.001	85.3 (5.64)	84.9 (5.44)	1.39 (0.9, 1.8)	0.079	2.7 (2.0, 3.4)	0.001*

* p-value is significant

^a Paired t-test applied^b ANCOVA applied (adjusted for age, BMI, duration of hypertension and level of belief of Al-Quran to health).

DISCUSSION

Numerous studies show that reduction of blood pressure provides cardiovascular benefits such as a reduction in the risk of stroke, coronary events and heart failure. A reduction of 10 to 12 mmHg in SBP and a 5 to 6 mmHg in DBP reduce the risk of stroke by 38 percent and coronary disease by 16 percent.¹⁵ Another meta-analysis showed that a 10 mm Hg reduction of SBP or 5 mmHg of DBP would lower the risk of stroke death by 50% to 60% and 40% to 50% for coronary artery diseases.¹⁶ Even a 2 mm Hg reduction in diastolic blood pressure would result in a 6% reduction in the risk of coronary heart disease and a 15% reduction in risk of stroke and transient ischaemic attacks.¹⁷

A variety of therapies that reduce stress and encourage relaxation have been investigated as methods to treat hypertension. Examples include relaxation therapy, music therapy and meditation. A meta-analysis by Do Amaral et al., (2016),⁶ showed that music therapy reduced blood pressure. Similarly, the practice of yoga for 12 weeks has been shown to reduce blood pressure in patients with hypertension.⁷ A systematic review was done by Bradt and Dileo (2013) to investigate the effect of music on stress and anxiety reduction in coronary disease patients.¹⁴ Blood pressure and heart rate were studied as secondary outcomes. It was found that listening to music significantly reduced the SBP by 5.34 mmHg and DBP by 1.54 mmHg. Music was shown to improve dopaminergic neurotransmission which involves in blood pressure regulation¹⁸ and works as anxiolytics.¹⁹ A randomized controlled trial was done to look at the effect of meditation on 298 youths with 159 of them had high risk for hypertension. There was a significant reduction in the

meditation group versus the control group with a reduction of blood pressure of 5.3/1.7 mmHg versus 3.3/1.0 mmHg.²⁰ A systematic analysis by the Cochrane review also showed that the effect of relaxation therapy in the management of primary hypertension in adults is small but statistically significant (the mean difference in SBP was 5.5mmHg and DBP was 3.5mmHg).²¹

Listening to Quran recitation provides a calming effect and probably similar to meditation or listening to music.²² Listening to Quran recitation was shown to generate an alpha wave which helps the individual to be in a relaxed condition.^{22,23} When listening to Al-Quran recitation and going through the meaning of the verses, it will produce a state of mind that focuses on the meaning of the verses. The mind is not focused on the external world or the events taking place around. This will produce an inner state that is still and one-pointed so that the mind becomes silent. In addition to that, the reduction of blood pressure after listening to Quran recitation was probably achieved through the reduction of stress or distress level. It is similar to the stress reduction intervention that uses music therapy.

Many studies have looked into the effect of listening to the Quran recitation on blood pressure especially in patients in the intensive care unit (ICU). The effect of listening to Quran recitation was shown to reduce blood pressure in ICU patients.²⁴⁻²⁷ A systematic review on the effect of listening to Quran recitation in ICU patients showed that the intervention resulted in haemodynamic stability.²⁸

Our results show a statistically significant immediate reduction in both systolic and diastolic blood pressure and pulse rate after a single session of listening to Quran recitation compared to the control group. The mean reduction of blood pressure in the intervention group was 5.9/3.8 mmHg compared to 1.7/1.8 mmHg in the control group, the reduction was 1.68mmHg after a single session of rest. Although both groups showed statistically significant reduction in systolic blood pressure at the end of the study. The listening to Al-Quran recitation group showed a statistically significant changes of reduction

compare with control group with net reduction of 4.3 mmHg ($p < 0.001$). The mean reduction of the diastolic blood pressure after intervention was 3.76 mmHg. Whereas the mean reduction of diastolic blood pressure in control group was 1.84mmHg. The net reduction of diastolic blood pressure with confirmatory test was 1.9mmHg and was statistically significant. In the pulse rate analysis, the mean reduction of pulse rate in the intervention group was 4.06 beat per minute when compare with control group at 1.39 beat per minute ($p < 0.001$).

Although the reduction was small, studies have shown that even a small blood pressure reduction will reduce cardiovascular complications. In our study, Quran recitation was used as an adjunct method to the standard medical treatment. Therefore, a reduction of the above-mentioned values is clinically significant if it is used on top of medical treatment. A similar study was done among hypertensive patients attending a primary care clinic in Jeddah, Saudi Arabia.²⁹ In their study, patients were listening to Quran recitation for 10 minutes and a few readings of blood pressure were measured. The reduction of SBP, DBP and heart rate were all statistically significant after the intervention. The changes were between 5.0 to 8.7 mmHg for the SBP and 2.9 to 5.5 mmHg for the DBP. Another study was done by Wirakhmi et al., (2020) to compare the effect of a 15-minute listening to Quran recitation and a 15-minute muscle relaxation therapy on blood pressure of hypertensive patients. Listening to Quran recitation had a more reduction effect on blood pressure than muscle relaxation therapy although the results were not statistically significant.³⁰

Our research had several limitations. This trial can only study the immediate effect of the intervention on blood pressure. The long-term outcome which is the foremost important goals in managing hypertension cannot be evaluated. The outcome assessor was not blinded and may expose to outcome bias. There was only one assessor who assessed the participant at the entry and at the end of the intervention. The control group was not wearing the headphone to reduce the influence of background noise which could affect their BP and HR reading.

CONCLUSION

Listening to Quran recitation showed an immediate effect on the reduction of blood pressure and heart rate among uncontrolled hypertensive Muslim patients.

SOURCE OF FUNDING

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

ETHICAL APPROVAL

The research was approved by Universiti Sains Malaysia Ethical Committee. All procedures performed and data collection in this study were in accordance with the ethical standards of the institutional research committee (USMKK/PPP/JePem [252.3.(9)]).

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