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Effects of Ayatul Kursi on anxiety and pain levels in adult hematological cancer patients Islamabad, Pakistan

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Abstract--Background: Cancer is a life threatening disease and considered the leading cause of death in low-income countries. Anxiety and pain are the most common problems experienced by the cancer patients. Purpose: The purpose of this study was to determine the effects of Ayatul Kursi on anxiety and pain levels in adult hematological cancer patients admitted in oncology in-patient units of tertiary care hospital. Methodology: This study was a time series Qusai experimental pretest post-test design conducted in tertiary care hospital, Islamabad, Pakistan. The total sample size was 35 patients; those patients who met the inclusion criteria were conveniently sampled. Patient anxiety level was measured on Generalized Anxiety Disorder-7 (GAD-7) scale and pain level was measured on Numerical Rating Scale (NRS).The intervention was recorded recitation of Ayatul Kursi in the voice of Qari Abdul Basit, with an Urdu translation. Patients listen ten times to the recitation on an MP3 player with the help of earphones. Two cycles were given to the patient in a day and intervention was given to the patients for three days. Data was recorded before giving the intervention on day one. The second data was recorded immediately after evening dose of the intervention on day two. The third data was recorded after evening dose of the intervention on day three. Descriptive and inferential statistics were used to analyze data. Results: There was a statistically significant reduction in means anxiety and pain levels ($P = .001$) after receiving the intervention cycles. Conclusion: The findings of this study demonstrated that there was significant effect of Ayatul Kursi on

anxiety and pain levels reduction in hematological cancers patients. Thus, it is recommended as a non-pharmacologic intervention.

Keywords---Hematological Cancer, Pain, Anxiety, Qusai experimental.

Introduction

Cancer is considered to be the most common of all critical illnesses that lead to death. Cancer is defined as a disease in which body cells divide and attack neighboring cells without any control (1). It is the second leading cause of death worldwide and responsible for 9.6 million deaths in 2018 (2, 3). Moreover, the burden of cancer is increasing continuously and approximately 70% of deaths from cancer occur in low and middle-income countries (4). The cancer mortality rate increased in Palestine from (10.8%) to (13.3%) between 2010 and 2013. In 2008, the mortality rate due to cancer was 1.96 million in China and it is projected that the number will increase to 2.76 million by 2020 (5). Likewise, cancer is also leading cause of death in India; one million new cases are diagnosed in India every year. In Pakistan, approximately 320,000 new cancer cases are diagnosed each year. In addition, leukemia was the most prevalent among hematological cancers in adult patients of both genders in Pakistan (6).

Research studies and clinical practices have indicated that half of the oncology patients suffer from different psychological problems. The common psychological problems that are seen in oncology patients include depressive disorders, stress disorders, anxiety disorders, sexuality dysfunctions, delirium and other cognitive disorders (7, 8). According to American Cancer Society, there are more than 30% of cancer patients who had experienced significant level of anxiety (9). Likewise, the research that was conducted in adult outpatients at a tertiary cancer center and found 34% patients with significant anxiety symptoms (10). Anxiety can occur from mild to severe and varies at critical points, such as before or after getting the test results. Moreover, anxiety can combine with other psychological problems in cancer patients. The research conducted in China shows the prevalence of anxiety, depression, or anxiety combined with depression in cancer patients that accounts for 21.1%, 34.4% and 15.6%, respectively (11).

In addition, pain is one of the most terrifying symptoms experienced by the cancer patients. It is not possible to treat cancer patients without addressing their pain. Cancer pain is considered as a stressful and even an unbearable aspect of cancer by over 33% of the patients (12). The pain prevalence in early stage is 48% and advance cancer pain prevalence is from 64% to 75 % (13). Different kind of psychological approaches are used in the management of anxiety and pain in cancers patients. These approaches include hypnosis, meditation, guided imagery, music therapy and biofeedback. All have been proven to be effective in reducing anxiety and pain in the cancer patients. Psychosocial interventions has shown modest effects for reducing anxiety in adults with cancer. The uses of Group therapy, hypnosis, massage, acupuncture, and daily exercise have also been used to help eliminate anxiety (14). Music therapy is considered to be a cost effective, safe, non-pharmacologic measure for lowering the anxiety in the

treatment of breast cancer patients. It was reported that the effect of music therapy on anxiety levels in breast cancer patients found a significant lowering in anxiety levels in the patients that received music therapy compared to the control groups.

Methodology

The study was conducted after getting the approval from the Institution Review Board. The researcher was responsible for obtaining informed consent before taking the information from the participants. All interested participants were provided with a full explanation of the study. Participants were asked to give informed consent by signing the form after the study information has been provided and the researcher assured that the participants understand the implications of their participation in this study. The time series Qusai experimental pretest post-test design was used in this study. The data was collected in the clinical settings of oncology inpatients units of Private Hospital, Islamabad, Pakistan. Hematology cancers (e.g. Leukemia's, lymphomas, and multiple myeloma) patients admitted in oncology inpatients units of tertiary care hospital of Islamabad were the study population.

Eligibility Criteria

Inclusion Criteria

- Muslim patients
- Patients receiving chemotherapy/received chemotherapy within a month
- Patients who know their medical diagnosis
- Age ≥ 15 years old
- Presence of anxiety according to GAD-7 Scale
- Patients who are able to communicate effectively with interviewer and must be able to give a written informed consent.
- Pain level mild (1-3) to moderate (4-6) according to Numeric pain scale.

Exclusion Criteria

- Patients with significant cognitive impairment
- Patient taking spiritual treatment from spiritual healers
- Signs of psychiatric illness
- Psychoactive medication
- Analgesic medications
- Hearing impairment

The convenient sampling technique was used in this study to gather the data. Those patients who were easily available and ready to participate after fulfilling the criteria were taken in the study. The intervention which was used in this study was the Ayatul Kursi. The recorded recitation of the above mentioned Surah was played in the voice of Qari Abdul Basit, with an Urdu translation. Patients listen to the recitation on an MP3 player with the help of earphones. The medium voice level was set in the MP3 player and volume was adjusted according to the patients. Patients were lying on the bed in a comfortable position, while the room lights were turned off. Patients listened ten times to the recitation of verse

number 255 from Surah Baqarah, referred to as the Ayatul kursi for approximately 24 minutes. Two cycles were given to the patients in a day. The intervention timings were approximately 0600 hours and 1800 hours. The intervention was given to the patients for three days on an individual basis. Data was recorded before giving the intervention in the form of a questionnaire on day one. The second data was recorded immediately after evening dose of the intervention on day two. The third data was recorded after evening dose of the intervention on day three. The Generalized Anxiety Disorder-7 (GAD-7) was used in this study to determine the presence of anxiety. In addition, the second tool that was numeric pain scale used in this study to measure the pain levels. It was developed initially by Michael Bond in 1960, later on European Association for Palliative Care (EAPC) expert produced a valid version in 2001. The questionnaire was translated in Urdu language from the experts. The Content Validity Index (CVI) was 1.0 of GAD-7 scale, which was measured after checking the relevance of each item by the experts. For the purpose of checking the comprehension and understanding of the questions the tool was pilot tested before the start of the study. For purpose of data collection, patients with hematological cancer were selected on the census sheets of the units on a daily visits. The selected patient's medical diagnosis and other study inclusion and exclusion requirements were studied from the patients file in details. Those patients who fulfilled the study criteria were taken in the study. After taking the inform consent, the questionnaire was used to assess the presence of anxiety and pain, those patients who were having the anxiety according to GAD-7 scale and pain mild to moderate according to numeric pain scale were taken in the study.

Results

Descriptive Statistics

Table 1: Demographic Variables of Patients (N=35)

Variable Name	Category	Frequency	Percentage
Gender	Male	22	62.9%
	Female	13	37.1%
Marital Status	Married	24	68.6%
	Unmarried	11	31.4%
Occupation	Employed	7	20%
	Unemployed	6	17.1%
	Retired	4	11.4%
	Business	8	22.9%
	Others	10	28.6%
Education	Yes	33	94.3%
	No	2	5.7%
Education Level	Primary Level	3	9.1%
	Middle Level	4	12.1%
	High Level	4	12.1%
	Above High Level	18	54.5%

Inferential Statistics

In inferential statistics repeated measures of ANOVA was used to determine mean difference in anxiety and pain scores. Before applying repeated measures ANOVA, the assumptions that are required for repeated measure ANOVA were checked. In this study, dependent variables were measured on continuous scale and there was no significant outlier in the data. Moreover, it was checked that dependent variables are approximately normal distributed. Mauchly's test of sphericity was also applied on the anxiety and pain levels because Mauchly's test of sphericity is considered as a formal method of testing the assumption of sphericity.

Table 2: Descriptive Statistics of Outcome Variables

Variable Name	Mean	S.D
Anxiety level First day	6.3	±2.6
Anxiety level Second day	6.4	±2.3
Anxiety level Third day	5.0	±2.3
Pain level First day	3.2	±1.7
Pain level Second day	2.4	±1.7
Pain level Third day	1.6	±1.6

Anxiety

Mauchly's test of sphericity was applied on anxiety levels to check the assumption of sphericity and below table shows its results.

Table 3: Mauchly's Test of Sphericity on Anxiety

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	Df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Anxiety	.716	11.038	2	.004	.779	.809	.500

Table 4 shows that Mauchly's test of sphericity was applied on anxiety levels and found that $p < 0.05$, $\chi^2 = 11.038$, so the assumption of sphericity has been violated. Therefore, it is concluded that there are significant differences between the variances of the differences. Furthermore, correction measures were used.

Table 4: Tests of Within-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Sphericity Assumed	113.390	2	56.695	62.916	.000
Greenhouse-Geisser	113.390	1.557	72.814	62.916	.000
Huynh-Feldt	113.390	1.618	70.065	62.916	.000
Lower-bound	113.390	1.000	113.390	62.916	.000

This data has violated the assumption of sphericity; therefore the correction measures were applied (See Table 5). As we use Greenhouse-Geisser if Epsilon $<.75$, if Epsilon $>.75$ then we use Huynh-Feldt. The value of Epsilon was checked and selected the Huynh-Feldt row (as indicated grey in the screen shot). It is reported that when using repeated measures ANNOVA with Huynh-Feldt correction, the mean score for anxiety levels were statistically significant in this study ($F=62.916$, $P<.001$) due to the effects of Ayatul Kursi.

Table 5: Pair Wise Comparisons of Anxiety Levels During Intervention Days

Anxiety Levels		Mean Difference Anxiety Levels	P Value
First day	Second day	1.171	.000
Second day	Third day	1.371	.000
Third day	First day	2.543	.000

Table 6 shows the pair wise comparison of anxiety levels among the three days of intervention cycles. Anxiety means difference between the first and second day was 1.171($P=.001$). Anxiety mean difference between the second and third day was 1.371($P=.001$). Anxiety means difference between the first and third day was 2.543($P=.001$). The highest anxiety means difference can be seen between the first and third day. Therefore, we reject the null hypothesis and it is concluded that Ayatul Kursi has significant effect on anxiety means reduction on three days.

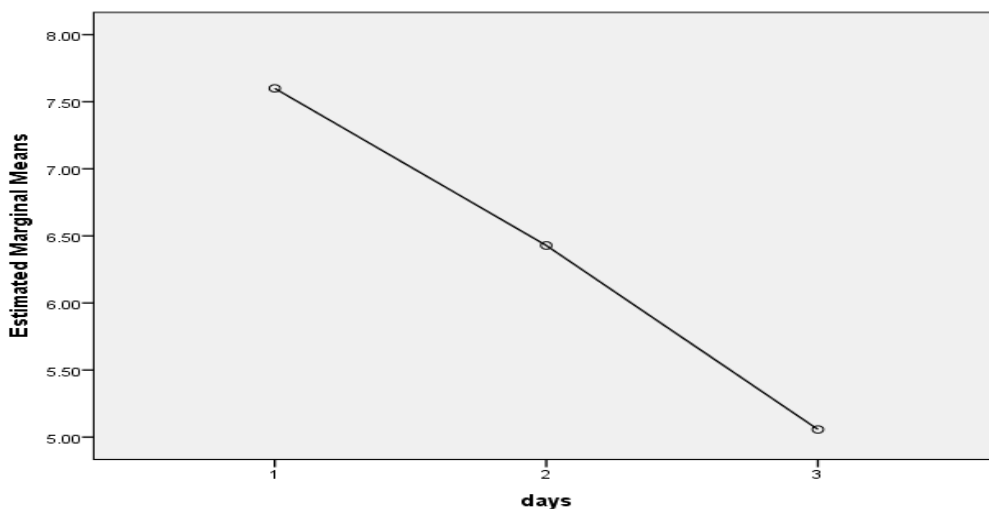


Figure 1: Estimated Marginal Means of Anxiety Levels

Figure 1 shows that the estimated marginal means of anxiety levels in three days. The estimated means anxiety on first, second and third day was approximately 7.6, 6.4 and 5.0 respectively. Hence, it can be concluded that there is statistically significant reduction on anxiety means levels on day two and three after the intervention. The over all, effect size was (Cohen's $d=0.5$) for anxiety level in this study which appeared to be a medium effect size.

Pain

Mauchly's test of sphericity was applied on pain levels to check the assumption of sphericity and below table shows its results.

Table 6: Mauchly's Test of Sphericity on Pain

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	Df	Sig.
Pain	.869	4.645	2	.098

Table 7 shows that Mauchly's test of sphericity was applied on pain levels and we found that $p > 0.05$, $\chi^2 = 4.645$, so the assumption of sphericity has been met. Therefore, it is concluded that there are significant similarities between the variances of the differences.

Table 7: Tests of Within-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Sphericity Assumed	40.171	2	20.086	42.912	.000
Greenhouse-Geisser	40.171	1.768	22.723	42.912	.000
Huynh-Feldt	40.171	1.858	21.625	42.912	.000
Lower-bound	40.171	1.000	40.171	42.912	.000

Table 8 shows that the assumption of Sphericity has been assumed. There is statistically significant effect of Ayatul Kursi on pain reduction ($F=42.912$, $p < .001$).

Table 8: Pair Wise Comparisons Pain Levels During Intervention Days

Pain Levels		Mean Difference Pain levels	P value
First day	Second day	.714	.000
Second day	Third day	.800	.000
Third day	First day	1.514	.000

Table 9 shows the pair wise comparison of pain levels among the three days. Pain levels means difference between the first and second day was .714($P=.001$). Pain levels means difference between the second and third day was .800($P=.001$). Pain levels mean difference between the first and third day was 1.514($P=.001$). The highest pain levels mean difference can be seen between the first and third day. Therefore, we reject the null hypothesis and it is concluded that Ayatul Kursi has significant effect on means pain levels reduction on three days.

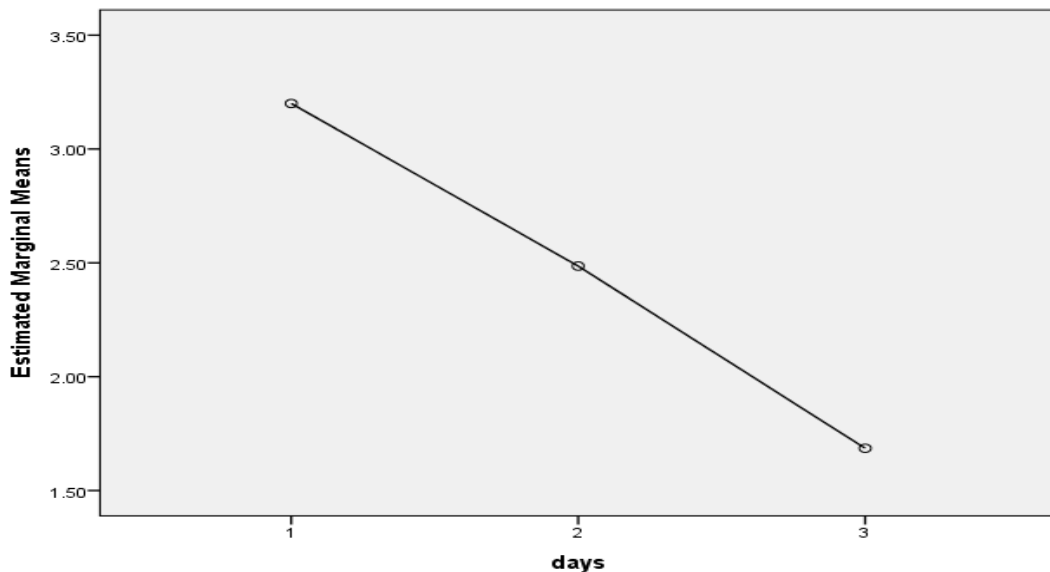


Figure 2: Estimate Marginal Means of Pain Levels

The overall, effect size in our study was (Cohen's $d=0.9$) for pain level which appeared to be a large effect size.

Discussion

In current study, effects of Ayatul Kursi on anxiety and pain levels in adult hematological cancer patients were investigated. In this study, majority of the patients were male and married, mean age was 41.4 which indicate that patients were in reproductive and earning age and facing the dual burden due to disease and household expenses. These findings are in line with findings of study conducted in Bangladesh by Hossain et al.2014 in which majority of the hematological cancers patients were male and their mean age was 42 years (14). Furthermore, it was also affirm from the literature that hematological cancers affect men more frequently as compared to women (15, 16). Moreover, in our culture male are the dominating and working gender and their exposure to the chemicals (Pesticides and smoking etc.) as well as radiation is high which can develop cancer (17). Additionally, female cases are usually underreported in low socioeconomic settings and men are prioritizing over female while seeking the medical attention/treatment (18). In addition, in this study most of the patients were educated which are likely to be easily access of middle and elite class patients in a private hospital.

This study affirms the effectiveness of Ayatul Kursi on anxiety levels reduction in hematological cancer patients. According to Malekian et al. 2007 the prevalence of anxiety was 28.9% among patients with leukemia. Anxiety affect not only psychologically but also impair the quality of life in cancer patients (19). Our study results were congruent with few published studies in which effects of Quran on anxiety level were examined such as Majidi, 2004 investigated the effects of Ayatul kursi reading on preoperative anxiety level and found statistically

significant reduction in anxiety levels (20). Furthermore, Najafi et al. 2013 investigated the effects of Quran recitation on anxiety level with myocardial infarction patients and found a statistical difference in anxiety level reduction (21). However, Razavian et al. 2012; Eckhouse et al. 2014 investigated that complementary therapies have no statistically significant effect on patient's anxiety (22). Their results are opposite with this study because of difference in methodology and intervention. They have used the soft music as an intervention while in the current study intervention was the Ayatul Kursi.

Moreover, the effectiveness of spiritual interventions was affirmed by another study that it can increase the ability of patients to fight against mental health crisis after the diagnosis and treatment of cancer (23). It is proven scientifically from the research studies that spiritual interventions increase synaptic interactions in the amygdale (a region in brain which reacts to emotional stimuli and anxiety) (24). Furthermore, cultural, spiritual and patients religious beliefs have also significant impacts on the results of anxiety levels in the conducted study.

This study also affirms the effectiveness of Ayatul Kursi on pain levels reduction in hematological cancer patients. Literature has indicated that cancer pain is very common in 30% to 40% of all cancer patients, which is the huge number that impairs the quality of life of cancer patients. Our results are congruent with the study Abbas et al. 2016 in which effects of Quran on maternal outcomes undergoing caesarian section were observed and it was found significant reduction of pain scores after the intervention (25). Moreover, pain is highly subjective and individual experience varies from one culture to another. Pain is also influenced by biochemical, psychological and social factors. Pain expression is varied across the culture, which influence the interpretation of pain assessment scores. In our study majority of the patients were male and in our culture it is believed that male have greater pain tolerance as compared with females. In addition, lack of pain expression could be because of family structure. In our culture parents are the stakeholder of the family and they do not express their pain in the presence of family members, so that family members do not become depressed. Religious and spiritual interventions are the core component of the culture in understanding and managing pain and they are considered as a positive strategy for coping with pain. Additionally, spiritual interventions are also helpful to improve and cope with the pain because spiritual interventions are easy to use and cost effective (26)

Implications

The results of this study may help the trained nurses and other health care workers to use Ayatul kursi as a non- pharmacological intervention to manage the anxiety and pain levels in cancer patients. Listening to Quran verses is a non-invasive, low cost intervention that can be easily implemented at bed side with the ear phones and it does not interfere with patient's routine care. In addition, nurses must encourage the patient's family to involve the patients in such kind of complementary therapies especially in developing countries where care for cancer patients is rarely available and patient's access to care is not affordable.

Limitations

There are some limitations present in our study. First, the sample size was less and more data cannot be collected due to the time limitation. Secondly, as the data is collected from the Muslim patients, therefore its findings cannot be generalized to the non-Muslim patients. Third, the randomize control trials cannot be performed due to difficulty in getting the hematological cancer patients. Fourth, the intervention was not applied on severe pain levels so further studies are need to be conducted to see the intervention effect on severe pain level.

Recommendations for research

- Further, randomize control trials are required to be conducted in multiple settings.
- The effectiveness of this intervention must be investigated on Non-Muslim patients.
- This conducted study will be published in National/International journals.
- More researches are needed to compare the effectiveness of Ayatul Kursi on anxiety and pain management with pharmacological management of anxiety and pain.

Conclusion

In conclusion, the results of this study showed significant reduction in means anxiety and pain levels after listing to Ayatul Kursi as an intervention. Therefore, it is recommended to use this non-pharmacological intervention for the management of pain and anxiety level in cancer patients. This intervention can become an integral part of the cancer patient care. Further researches are needed to investigate the effects of Ayatul Kursi on anxiety and pain levels in Non-Muslim patients.

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