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Impact of ATAQ spiritual therapy on the index hematological parameters in a healthy population of adults

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***Abstract*---**One of the roles of nurses is to improve public health with spiritual-based interventions. This study aims to determine changes in hematological parameters after spiritual intervention in normal healthy adults in the city of Kendari, Indonesia. Study participants were taken voluntarily from 60 normal healthy adults, aged 20-35 years who were in Kendari city. Written informed consent was obtained from each participant after explaining the objectives, risks and benefits of the study. For each respondent, before and after spiritual therapy, hematological parameters were checked. There was difference ($p<0.05$) for hematological parameters: in group A (treatment) after being given ATAQ spiritual therapy for 30 days there was an increase in RBC levels ($p<0.05$) and a decrease in WBC levels ($p>0.05$). While group B (control) was not given ATAQ spiritual therapy, but was given education, there was a decrease in RBC levels ($p >0.05$), and an increase in WBC levels ($p <0.05$). This study provides additional baseline data for baseline hematological parameters in normal healthy adults after receiving OATAQ spiritual therapy. Interest and modification to follow spiritual therapy that can improve health.

***Keywords*---**hematological parameters, ATAQ, spiritual therapy, RBC, WBC

Introduction

The concept of spirituality as part of nursing standards and one's spiritual needs are an integral part of nursing care (McEwen, 2005). Spiritual care as an essential component of a holistic model of nursing (Kate Ellis & Narayanasamy, 2009). Nurses view a person as a biopsychosocial being with a spiritual core is a holistic nursing perspective.(Forouzi, Tirgari, Safarizadeh, & Jahani, 2017; Mauk & Schmidt, 2004; Tirgari, Iranmanesh, Cheraghi, & Arefi, 2013). Ignoring one's spiritual needs will lead to feelings of isolation and spiritual distress, hence the importance of guidelines for spiritual, cultural and religious-based care (Narayanasamy, 2006). Spiritual health is a state when one feels calm through connection with oneself, others and God Almighty.(Heydari, Khorashadizadeh, Heshmati Nabavi, Mazlom, & Ebrahimi, 2016; Khorashadizadeh et al., 2017)

Spiritual therapy developed based on evidence and culture in Islam is Al-Quran therapy, Being a solution to the physical, psychological, spiritual and social ailments of mankind (Muhammad, 2017). Reading and listening to the Koran regularly and continuously will bring calm, peace, sincerity, patience, become an effective therapy of choice for someone who faces various pressures, suffering, pain, change and calamity.(Irman, Natashia, & Gayatri, 2021)

Application Therapy Al-Quran (ATAQ) is a spiritual therapy for the community based on psychoreligious therapy from Muslims which is sourced directly from the Quran and Hadith, and is a development of SQEFT therapy which has been developed in the research phase, with significant research in every trial that has been carried out. (Rosyanti et al., 2018; Rosyanti et al., 2019). The sound of the Qur'an can cause the release of endorphins by stimulating alpha brain waves, thereby reducing stress, eliminating negative emotions, and creating a sense of relaxation.(Almerud & Petersson, 2003; Ghiasi & Keramat, 2018).

Currently there is no Al-Qur'an and Hadith-based spiritual therapy that has been developed, while Indonesia is a country with the largest Muslim population, so the importance of ATAQ spiritual therapy that will meet the spiritual needs of the community to improve health, for patients as treatment, and for health workers. be a guide in spiritual care. (Hadju et al., 2021; Rosyanti et al., 2019). The method of spiritual therapy with the ATAQ approach can be the basis for the skills and guidelines of nurses in providing nursing care to Muslim patients (Rosyanti et al., 2019).

This study aims to see changes in hematological parameters in healthy adults before and after being given ATAQ therapy for 30 days. Hematological parameters are one of the most frequently used laboratory blood tests. Several major hematological indices, especially red blood cell (RBC) and white blood cell (WBC) counts have been associated with various diseases. (M. C. Wang et al., 2018) variations in hematological parameters can contribute significantly to the clinical consequences.(Santimone et al., 2011). The results of the examination of

hematological parameters can be used to interpret and establish the diagnosis, management and monitoring of hematological disorders, so that they are considered representative to see a person's health status. (Mengistu Sissay, Tibebu, Wasihun, & Tsegaye, 2021)

Method

The research used a Quasi-Experimental design with a pre-posttest design. Respondents were divided into 2 groups, namely Group A (ATAQ therapy treatment), and group B (Education). The research was carried out in Islamic boarding schools. The research period is February-Juny 2021.

Participants included in this study were apparently healthy adults of both sexes. Written informed consent was obtained from each participant after explaining the purpose, risks and benefits of the study. Volunteers were interviewed face-to-face using a pre-tested and semi-structured questionnaire to gather information on demographic data, clinical and medical history, health condition. Vital sign assessment (body temperature, body weight, blood pressure and pulse rate) using digital devices.

In our study, we followed the standard protocol of taking and the preparation of blood samples to minimize the interpersonal variability. For every respondent, the blood samples were withdrawn from the antecubital vein, in system BD Vacutainer tubes (3 mL), containing an anticoagulant the K3-EDTA, by puncture using the aseptic technique for the hematological study. The CBC test was performed the same day within 2 hours of collection.

A complete blood count and differential was performed on the blood sample using Sysmex XN-350, an automated 3-part differential hematology analyzer, single sample analysis in open mode. It has a fully integrated IPU (information-processing unit) including an LCD colour touchscreen. The XN-350 is the smallest of the XN-L series and its compact presentation makes it an essential tool that fits the needs of (satellite), at the laboratory of hematology of the hospital Bahteramas Kendari Indonesia. Standardization, calibration of the instrument, and processing of the samples were done according to the manufacturer's instructions. The machine automatically dilutes whole-blood sample of 50 ml in the CBC/Differential mode, samples were run in duplicate and the comparisons were performed with the average results. The following parameters were measured on both systems; white blood cells (WBC), red blood cells (RBC), hemoglobin (HGB), hematocrit (HCT), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), red cell distribution width (RDW-SD, RDW-CV), platelets (PLT), platelet distribution width (PDW), mean platelet volume (MPV), plateletcrit (PCT), % and for neutrophils (NEUT), lymphocytes (LYMPH), monocytes (MONO), eosinophils (EO), basophils (BASO), For the platelet parameter specifically, the XN-350 does not have the capability of measuring PLT-F (platelet-fluorescence) so instead, PLT-I (platelet-impedance) and PLT-O (platelet-optical) were evaluated in this study

The data were analyzed by entered daily using of the software IBM-SPSS Version 22 statistical software (SPSS version 24.0, SPSS Inc. Chicago, IL, USA). The study

of the distribution of variables was made by the test of Kolmogorov-Smirnov. The quantitative variables were expressed by the Mean, the standard deviation and the Delta. The comparison of the quantitative variables was made by using the Paired Samples T-Test t test was used for normally distributed data and Wilcoxon Signed Ranks Test for data not normally distributed..A difference is considered as statistically significant if $p < 0.05$.

The study was conducted after the study protocol was reviewed and approved by the Ethics Committee of the Poltekkes Kemenkes kendari. Informed written consent was also obtained from each study participant prior to data collection.

Results and Discussions

As shown in Table 1, no significant differences between all groups do not differ from gender, age and education.

Table 1
Demographic characteristics of respondents

Variable	Group A (treatment)			Group B (control)		
	f	%	Mean ± SE	f	%	Mean ± SE
Age						
20-25	20	66.7	1.40±.621	10	33.3	2.13±.899
26-30	8	26.7		6	20.0	
31-35	2	6.7		14	46.7	
Gender						
Male	20	66.7	1.33±.479	19	63.3	1.36±.490
Female	10	33.3		11	36.7	
Education						
High School	5	16.7	2.46±.776	10	33.3	2.13±.899
Diploma	6	20.0		6	20.0	
Bachelor	19	63.3		14	46.7	

Table 2
Statistical test of parameters of hematological respondents

Variable	Group A (treatment) Pre M±SD	Post M±SD	p-value	Variable	Group B (control) Pre M±SD	Post M±SD	Value P
Erythrocyte parameters							
RBCs (10^6/µL)	5.23±0.457	5.32±0.482	0.021^{s}	RBC*	5.51±0.845	5.34±0.462	0.09^{ns}
HB (g/dL)	14.2±1.26	14.5±1.40	0.003^{s}	HB*	15.4±1.99	14.9±0.915	0.07^{ns}
HCT (%)	43.4±3.51	44.3±3.78	0.003^{s}	HCT*	46.6±5.36	45.3±2.50	0.08^{ns}
MCV (fL)	83.1±4.12	83.4±4.34	0.079^{ns}	MCV*	84.9±6.30	85.2±5.35	0.64^{ns}
MCHT (pg)	27.2±1.39	27.3±1.43	0.011^{ne}	MCH*	28.1±1.82	28.0±1.86	0.59^{ns}
MCHC (g/dL)	32.7±0.747	32.7±0.788	0.484^{ns}	MCHC*	33.0±0.916	32.9±0.868	0.39^{ns}
RDW-SD (fL)	38.8±2.74	40.0±3.06	0.00^{s}	RDW*	40.7±2.43	40.6±2.66	0.43^{ns}
Leukocyte parameters							
WBCs (103/µL)*	7.56±1.44	7.49±1.80	0.82^{ns}	WBC*	7.88±2.02	8.70±2.00	0.00^{s}
LYM (103/µL)*	36.6±6.70	32.6±6.65	0.00^{s}	LYM*	34.7±7.58	30.1±7.79	0.00^{s}
MONO (103/µL)*	8.27±2.04	8.61±2.19	0.37^{ns}	MONO*	7.73±2.37	7.17±2.33	0.06^{ns}
NEU (103/µL)*	48.9±6.91	53.3±7.82	0.01^{s}	NEU*	52.4±9.33	58.0±9.90	0.00^{s}

EOS (103/µL)*	39.6±19.2	34.1±17.3	0.04^{s}	EOS**	4.61±4.14	4.12±4.12	0.00^{s}
BASO(103/µL)**	3.06±1.57	3.23±1.50	0.55^{ns}	BASO**	0.101±.358	0.040±.021	0.18^{ns}

Note: RBC=Red blood cells, HB=Hemoglobin, HCT=Hematocrit, MCV=Mean corpuscular volume, MCH=Mean corpuscular hemoglobin, MCHC=Mean corpuscular hemoglobin concentration. RDW=Red cell distribution width, WBC=White blood cells, LYM=Lymphocytes, MONO=Monocytes, NEU=Neutrophils, EOS=Eosinophils, BASO=Basophils, ns: Not significant>0.05, s: significant <0.05.* Paired Samples T-Test; **Wilcoxon Signed Ranks Test. M±SD=Mean±Standard Deviation

There was a statistically significant difference (p<0.05) for hematological parameters: in group A (treatment) after being given ATAQ spiritual therapy for 30 days there was an increase in Red blood cells (p-value = 0.021) and a decrease in White blood cells (p-value = 0.82). While group B (control), there was a decrease in Red blood cells (p-value = 0.09), and an increase in White blood cells (p-value = 0.00).

The comparison of the mean and standard deviation of erythrocyte levels in the two groups, there was an increase in group A (treatment), after ATAQ spiritual therapy from 5.23±0.457 to 5.32±0.482, compared to group B (control), decreased from 5.51±0.845 to 5.34±0.462. But in group A there was a decrease in leukocyte levels from 7.56±1.44 to 7.49±1.80 and in group B, increased from 7.88±2.02 to 8.70±2.00. The RBC delta value (0.94) in the treatment group was higher than control group (-1.76). While the WBC delta value (-0.76) in the treatment group was lower than control group (81.7) (Figure 1).

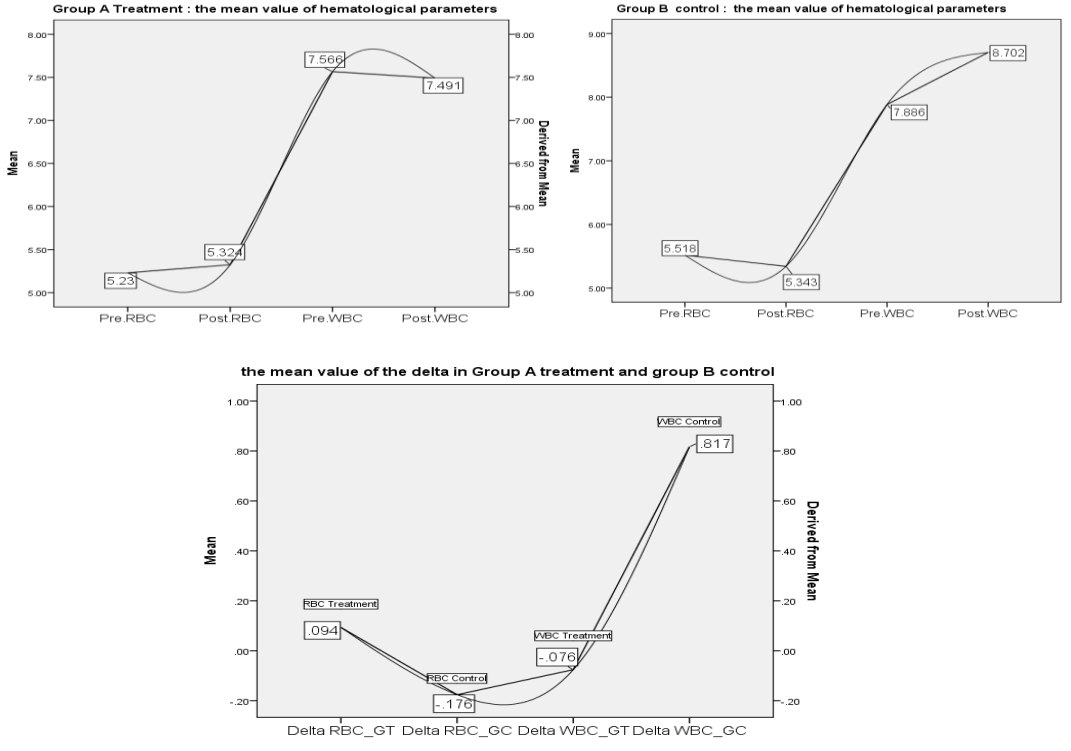

Figure 1. Comparison of RBC, WBC and Delta value between treatment and control group

For muslims, reading and listening to the Qur'an is part of daily worship. However, Muslims rarely use it as therapy because of the lack of knowledge about the therapeutic benefits of the Qur'an and no motivation to apply it. During the COVID-19 pandemic, many used Al-Quran therapy to help the healing process, but many did not know how to carry out the therapy. In general, they only read and listen to the Qur'an on a regular and scheduled basis and the benefits can be felt directly which are scientifically proven such as decreasing stress hormones, stimulating endorphins, increasing relaxation, reducing tension, positive effects, reducing anxiety and emotional. (Ab Rahman, Kashim, Mohd Noor, et al., 2020; Ridzuan, Sham, Mohammed, & Suzana; Umarella, Farid, & Ab Rahman, 2020).

Currently, research on the effect of spiritual therapy on changes in hematological parameters is still very rarely carried out, several research topics related to Al-Quran therapy are; Reading and listening to it energizes less active cells, stimulates the auditory system, activates the brain, increases alpha and theta brain waves. (Ab Rahman, Kashim, AY, et al., 2020; Ab Rahman, Kashim, Mohd Noor, et al., 2020; Fauzan & Rahim, 2014; Magomaeva, Bairamkulova, & Chotchaeva, 2019; Shekha, lah O. Hassan, & in A. Othman, 2013); Al-Quran therapy provides peace and confidence to get healing. (A. A. G. Saged et al., 2020) ; Reading and listening to the Quran will promote deeper concentration (Nelson, 2001); Reduce psychological pressure, stress, anxiety and depression.(Babamohamadi, Sotodehasl, Koenig, Jahani, & Ghorbani, 2015; Kamali et al., 2018; Ali Ali Gobaili Saged et al., 2018); Stimulates increased production of endorphins in the descending control system (Almerud & Petersson, 2003; Mottaghi, Esmaili, & Rohani, 2011); Affects physiological changes, respiratory rate, blood pressure, muscle relaxation, pulse, hemodynamics (Latuapo, Farid, & Ab Rahman, 2020; Qolizadeh, Myaneh, & Rashvand, 2019; Yadak et al., 2019).

The results of this study showed that in general in group A after receiving ATAQ spiritual therapy there was a significant increase in red blood cells, while in the control group there was a decrease. This shows that the therapy given can improve the function of red blood cells. The main component of blood cells is red blood cells, about 45% of the blood volume contains a solution of hemoglobin as a protein containing iron in the blood which is important for oxygen transport throughout the body. (Mauer, Peltomäki, Poblete, Gompper, & Fedosov, 2017) Red blood cells (RBCs) are the most abundant cell type in the human body and have an important function to deliver oxygen throughout the circulation and to rid the body of all carbon dioxide. (Bryk & Wiśniewski, 2017; Risinger & Kalfa, 2020). The effect of increasing RBC accompanied by an increase in Hemoglobin (HB), Hematocrit (HCT), and Mean corpuscular hemoglobin Concentration (MCHC) is an index of red blood cells in the respondent's body, indicating that ATAQ spiritual therapy has the effect of increasing the work of red blood cells important for improving health.

Red blood cells consist of 2650 proteins, with 41 membrane transporters (Bryk & Wiśniewski, 2017) causing the function of red blood cells in the body to become more complex, one of the functions of RBC is amino acid transport which helps the metabolic processes of cells and body tissues. (Gajecki, Gawryś, Szahidewicz-Krupska, & Doroszko, 2022). In some studies, red blood cells can carry amino

acids to deficient cells and tissues as they circulate through the capillaries and carry out their function as transporters, and this will help keep cells and body tissues healthy and optimal. (Thorn & Dunstan, 2020). This strengthens the results of this study regarding the effect of ATAQ spiritual therapy on increasing the work of red blood cells, in healthy respondents.

In this study, there was a decrease in white blood cells (leukocytes), in the treatment group, while in the control group it increased, but both were still within normal limits. An increase in the WBC white blood cell count is a common laboratory finding, but if there is an increase, further investigation and testing is required for morphological features and findings. (Chabot-Richards & George, 2014). Spiritual therapy that is carried out can cause changes in WBC, in the study of Almerud et al, Alquran spiritual therapy can improve the body's immune system. Until now, research that discusses the influence and impact of spiritual therapy on hematological parameters both on red blood cells and white cells is still rare, (Almerud & Petersson, 2003).

The decrease in white blood cells in this study indicates that this therapy can maintain the balance of the normal adult body's defense system. White blood cells (leukocytes) have an important role in the human immune system. The content of various subtypes of white blood cells will always be maintained within a certain range in the human body, so that an increase above the normal value becomes a warning sign of disease, so the importance of detection and classification of leukocytes. to determine the condition of a person's body and become a diagnostic option. (Mengistu Sissay et al., 2021; Yao & Huang, 2021)

The decrease in WBC in this study was accompanied by a decrease in lymphocytes and eosinophils, but in neutrophils, monocytes and basophils there was an increase which was within the normal range. White blood cells (leukocytes) are an important part of the human blood and immune system (Burrell, Howard, & Murphy, 2017; Chaplin, 2010). Each white blood cell has its own characteristics and functions in a person's body. Neutrophil cells are the most common phagocytes, accounting for 50%-60% of the total leukocyte count. Eosinophil content between 1% and 6%, Basophils are one of the least common cells in the bone marrow and blood, accounting for less than 2%. Monocytes are produced in the bone marrow and are a type of white blood cell with a nongranular cytoplasm, accounting for 2%-10% of all white blood cells. Lymphocytes are the smallest type of white blood cells, which can be divided into T cells and B cells which account for about 20% -30%.(Medical, 2014; Yao & Huang, 2021)

This WBC population has a typical range of concentrations in healthy people. The decrease in WBC that occurred in this study is evidence of the effect of ATAQ spiritual therapy on the composition and number of white blood cells in general, and the decrease in lymphocytes is also an important medical diagnostic in determining a person's health status, when lymphocytes are in the normal range, it is a sign of a disease. condition body in good condition (M. C. Wang et al., 2018; Q. Wang et al., 2021). Research related to Islamic culture and religion conducted by Herlianita, et al to examine 256 perceptions of Muslim nurses about The Spirituality and Spiritual Care Rating Scale (SSCRS). The result is that most of

the nurses have done the care of patients with spiritual needs, but do not have formal training in providing spiritual care, lack of knowledge and competence of nurses about spiritual care in Muslim health care environments. (Herlianita, Yen, Chen, Fetzer, & Lin, 2018), so that the spiritual therapy method with the Koranic therapy approach (ATAQ) can be the basis for the skills and guidelines of nurses in providing nursing care to Muslim patients. (Ghanei, 2012; Heydari et al., 2016)

Conclusion

This study is the first attempt to establish reference values for RBC and WBC, with spiritual therapy, for a healthy adult population living in the Kendari city area, Southeast Sulawesi, Indonesia. Therefore it is very important to consider ATAQ spiritual therapy as a medical treatment and public health improvement

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