Global Journal of Science Frontier Research: I
Interdisciplinary
Volume 23 Issue 1 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4626 & Print ISSN: 0975-5896

The Investigation of the Effects of Ramadan Fasting on the Mood State of Family Physicians, Does Ramadan Fasting have a Protective Effect on Human Psychology?

By Özgür Erdem, Dudu Izgi Gencel, İzzettin Toktaş, Ahmet Yosunkaya & Ali Erdem

Mardin Artuklu University

Abstract- *Objective:* The present study has been carried out to investigate the effect of Ramadan fasting on human psychology among family physician, working in Diyarbakır, Turkey.

Method: In this cross-sectional study, the universe of the research is composed of family physicians. A questionnaire form included Turkish version of the Depression Anxiety Stress Scale (DASS-42) was prepared. The study was conducted during the summer of 2017, at the final week of Ramadan, 21st - 25th of June. SPSS 21.0 statistical package was used in the data analysis.

Keywords: *depression, anxiety, stress, ramadan fasting, psychology.*

GJSFR-I Classification: *LCC: R, RC435-571*

Strictly as per the compliance and regulations of:

The Investigation of the Effects of Ramadan Fasting on the Mood State of Family Physicians, Does Ramadan Fasting have a Protective Effect on Human Psychology?

Özgür Erdem [α], Dudu Izgi Gencel [σ], İzzettin Toktaş [ρ], Ahmet Yosunkaya [ω] & Ali Erdem [¥]

Abstract- Objective: The present study has been carried out to investigate the effect of Ramadan fasting on human psychology among family physician, working in Diyarbakır, Turkey.

Method: In this cross-sectional study, the universe of the research is composed of family physicians. A questionnaire form included Turkish version of the Depression Anxiety Stress Scale (DASS-42) was prepared. The study was conducted during the summer of 2017, at the final week of Ramadan, 21st - 25th of June. SPSS 21.0 statistical package was used in the data analysis.

Results: 209 healthy subjects with no known health problems and who were not in the risk groups in terms of mental and physical health were included in the statistical evaluation. Of the 209 people included in the evaluation, 163 said they "fasted this month in Ramadan" and 46 said "they did not fast this month in Ramadan". According to the DASS score, when fasting people were compared to those who did not fast in Ramadan; depression ($p < 0,05$), anxiety ($p > 0,05$) and stress ($p < 0,05$) scores were found to be lower in fasting sample. When compared to those who fasted in Ramadan and those who did not fast; depression, anxiety and stress prevalence were found to be lower in fasting sample.

Conclision: The current study results demonstrated that fasting in the holy month of Ramadan has been effective in diminishing stress, anxiety, and depression levels. Therefore, it is concluded that Ramadan fasting has a protective effect on human psychology.

Keywords: depression, anxiety, stress, ramadan fasting, psychology.

I. Introduction

The fast of Ramadan is one of the five pillars of Islam; it is also one of the greatest of the marks and observances of Islam. There are many purposes and instances of wisdom in the fast of Ramadan with aspects to God Almighty's dominicality, man's social and personal life, and the training of his instinctual soul, and his gratitude for divine bounties (1). Healthy and sedentary individuals have been frequently investigated through Ramadan fasting. Although fasting in the holy month of Ramadan is influential on physical and mental health based on religion of Islam (2) and several studies have described the effect of fasting on physical health (3-6), few investigations have addressed to the relationship between fasting and mental health (7-9). Studies examining the association of fasting and mood can be divided into two groups: the first group features experimental studies, while the other group of studies is observational studies on the effects of Ramadan on mood, i.e. a partial fasting for one month per year. Recent clinical observations demonstrated an early (within few days) favourable effect of medically supervised fasting (for 7–20 days) on depressive symptoms, and an improvement in mood, alertness, pain and a sense of tranquility (10,11). However, the results of such experimental fasting cannot be extrapolated to Islamic intermittent fasting during Ramadan because the duration of each fasting episode of experimental fasting is usually more prolonged than the duration of fasting during Ramadan (12).Moreover, Ramadan fasting has unique characteristics. During every day of the month of Ramadan, Muslims abstain from food, drink and smoking between dawn and sunset.

The effect of Ramadan on health has been studied extensively, for example, in relation to diabetes mellitus, electrolyte imbalance, sleep–wake cycle, daytime alertness and other physiological parameters. Unfortunately, the effects of fasting during the month of Ramadan have not been studied adequately in relation to psychiatric disorders. On extensive literature search, we could only find a few studies examining the relationship between fasting and mood changes. Therefore, the effect of Ramadan fasting on mood and depressive symptoms remains to be determined in well-designed studies. In this respect, the month of Ramadan represents an opportunity to study the relationship between mood disorder and Ramadan

Author α: University of Health Sience Gazi Yaşargil Education and Research Hospital, Diyarbakır, Turkey. e-mail: dr.oerdem@hotmail.com
Author σ: Urla İbrahim Hüsniye Özdurakoğlu Family Health Center, İzmir, Turkey.
Author ρ: Mardin Artuklu University, Public Health Department, Mardin, Turkey.
Author ω: Park Orman Family Health Center, Diyarbakır, Turkey.
Author ¥: University of Health Sience Bozyaka Education and Research Hospital, İzmir, Turkey.

fasting. The overall objective of this study was to explore the psychological effects that occur during the Ramadan month, especially effects on depression, anxiety, and stress. We hypothesized that fasting people would be happier, joyful, peaceful, carefree and more stress-free during this month. In the present study, we aimed to investigate the spiritual status of doctors who study in the primary health care and to compare mood state of faster doctor to non-faster doctors in the holy month of Ramadan.

II. Materials and Methods

In this cross-sectional study, the universe of the research is composed of the doctors, working in family health centres in Diyarbakır. After the literature search, a questionnaire form was prepared. The form included a demographic questionnaire eliciting information regarding age, gender, marital status, educational level, and profession year, and Turkish version of the Depression Anxiety Stress Scale (DASS-42). This questionnaire contained 42 questions, of which there were 14 questions related to stress, 14 questions about anxiety, and 14 ones assessing depression. Each question has a four-part range in which options are graded from 0 to 3. The validity and reliability of the questionnaire in Turkish have been approved by Bilgel and Bayram (13).Ethically, the participants were informed about the aims of the study and they were asked if they would like to volunteer for participation. They were also informed that they could withdraw from the study an any time and that all information would be kept strictly confidential. The online questionnaire technique was used to obtain the data via e-mail and smartphone. The study was conducted during the summer of 2017, at the final week of Ramadan, 21st - 25th of June. There are about 400 family physicians in Diyarbakır and 293 of them voluntarily accepted to participate in our study.

We know that factors such as environment, education, economy, geography, season, occupation play a significant role in the etiology of mental illnesses such as depression, anxiety and stress. Therefore, we have included doctors who have the same profession and education level, who have similar economic income, live in the same geographical area and are interested in similar patient groups in the study. In addition, the criteria for participant exclusion from the study were as follows: “Have you experienced a major event such as accident-death that could seriously affect your psychology in the last year?”, “Do you have any psychiatric treatment in the last 6 months?”, “Do you have a chronic illness?” and “Do you have any drug use continuously?” those who answered "Yes" to the questions (n=84) were excluded from the evaluation. Thus, the confounding factors were intended to be minimized. The remaining 209 healthy subjects with no known health problems and who were not in the risk groups in terms of mental and physical health were included in the statistical evaluation.

a) Statistical Analysis

SPSS (Statistical Package for the Social Sciences) 21.0 statistical package was used in the data analysis. Data were expressed as frequency, percentage and means (SD). The reliability of the questionnaire was tested and the Cronbach's Alpha value was calculated as 0.963. The relations between the dependent and independent variables were examined with the cross tables (Chi-square=$\chi 2$). To compare the two groups in respect to the scores of the scales, Mann-Whitney U was used. The statistical analyses were considered significant if $p<0,05$.

III. Results

Of the 209 people included in the evaluation, 163 said they "fasted this month in Ramadan" and 46 said "they did not fast this month in Ramadan". The mean (SD) age of the participants was 38,0 ± 7,5 (range, 24-64 years). The mean (SD) professional experience of the doctors was 12,4 ± 6,9 years (range, 1-34 years). Among the participants, 17.7% (n = 37) were female and 82.3% (n = 172) were male, 18.7% (n = 39) were single and 81.3% (n= 170 people) were married. Other socio demographic data of participants were summarized in Table 1. According to doctors who fasted and did not fast, it was determined that the number of patients applied in Ramadan decreased and the patients were to be more aggressive ($p>0,05$). According to the DASS score, when fasting people were compared to those who did not fast in Ramadan; depression ($p <0,05$), anxiety ($p> 0,05$) and stress ($p <0,05$) scores were found to be lower in fasting sample (Table 2).

When compared to those who fasted in Ramadan and those who did not fast; depression, anxiety and stress prevalence were found to be lower in fasting sample (Table 3). The prevalence of depression detected in fasting group was 27.0%, in non-fasting group was 45.7% ($p<0,05$). The prevalence of anxiety detected in fasting group was 25.2%, and in non-fasting group was 41.3% ($p<0,05$). Finally, the prevelance of stress detected in fasting group was 21.9%, while the rate was 37.0% in non-fasting group ($p<0,05$).

IV. Discussion

Ramadan fasting is unique because of its intermittent nature and also has many spiritual benefits. It allows deep introspection and an increased awareness of one’s relationship with God and others around them, a greater appreciation of blessings, and it encourages compassion, care, and charity. There are several physical benefits too. Fasting reduces low-density lipoprotein and cholesterol levels, and improves

weight and glycaemic control (14).Although Ramadan fasting imposed no adverse effects on short-term memory and did not negatively impact the cognitive flexibility function (7,15), results in another study show that the effect of fasting on cognition is heterogeneous and domain-specific (16).

Ramadan fasting results in decreased REM sleep with no impact on other sleep stages, the arousal index or daytime sleepiness (12,17). However, eating exclusively at nighttime imposes significant alterations on individuals' life style and sleep-wake cycles; therefore, food and fluid deprivation theory does not appear to be a convincing explanation for all the presumed impacts of Ramadan fasting. The studies described that combination of changes in sleep-wake cycle, food and fluid intakes, and circadian rhythms was likely to affect mental, physical, and social performances (18). Their findings showed that sleep loss might be responsible for excessive fatigue and reduced alertness in the daytime. Ramadan fasting also imposes deep impacts on the natural circadian rhythm through significant shifts in sleep patterns, body clock, and other physiological indices (18,19). Irritability could be increased during Ramadan fasting which was attributed to reduction in sleep time or nicotine withdrawal (20). Similarly, impairments in vigilance, memory, and continuous attention have been suggested in the course of Ramadan (21).

To date, there are only a few studies that have examined the effects of Ramadan fasting on psychological state and mental health, especially on anxiety, depression and stress. In these investigations, there were no differences in tension, depression, anger, vigor, and confusion estimated by the *Profile of mood states* questionnaire. Only fatigue was higher at the end of Ramadan (22). The result of a pilot study indicates that the Ramadan month may disrupt the mood state of bipolar patients. The relapses were not associated with a change of blood level of lithium. Most of the relapses were of a manic type (77.7%) (23). On the contrary, Farooqa et al. did not find evidence of significant deterioration in mood and mental state. None of the patients relapsed requiring admission or change in treatment. They observed a significant reduction in Hamilton Depression Rating Scale scores during Ramadan compared with pre-Ramadan assessment. The scores on Young Mania Rating Scale also showed a significant decrease during Ramadan compared with pre and post-Ramadan assessments (8).

Koushali et al. investigated Effect of Ramadan fasting on emotional reactions in nurses. The level of their emotional reactions was assessed by DASS questionnaire in two stages over 1-2 weeks before and after Ramadan. The findings showed that depression and stress levels were significantly reduced after in comparison with the levels before the holy month ($P<$ 0.05). Despite the reduction of anxiety level in fasting after Ramadan, the difference was not significant (24).

The results of another study reveal that according to the DASS score, depression anxiety and stress levels were significantly reduced at the end of in comparison with the levels before the holy Ramadan ($p <0,05$). Before the Ramadan; according to DASS score, the persons who were evaluated normally in terms of mood state, when the before Ramadan scores were compared to the end of Ramadan there was no statistically significant in depression, anxiety and stress between pre- and post-Ramadan. Therefore, it can be said that Ramadan fasting has not a negative effect on human psychology in healthy individuals. The persons who were evaluated depressive, anxious and stressful, when the before Ramadan scores were compared to the end of Ramadan depression, anxiety and stress scores were found to be lower at the end of Ramadan. Thus, it can be saidthat Ramadan has a positive effect on the psychology of individuals who are experiencing depression, anxiety and stres The results of the present study reveal that according to the DASS score, depression ($p <0,05$) and stress ($p <0,05$) scores were found to be lower in fasting people compared to non-fasting group. Depression, anxiety and stress prevalence were also found to be lower and statistically significant in fasting sample in comparison with those who did not fast in Ramadan (25).

Ourstudy had some limitations, including a small sample size especially in women and who did not fast. Were commend that the study in a larger sample size, should be performed in further investigations.

V. Conclusion

Millions of Muslims observe fasting in a wide variety of climatic conditions every year. However, epidemiological research is sparse especially in relation to psychiatric disorders. Gaining comfort and confidence and staying away from depression and anxiety are the most fundamental innate human needs, and researchers are striving to underlie the provision of relief in different ways. The current study results demonstrated that fasting in the holy month of Ramadan have been effective in diminishing stress, anxiety, and depression levels, as the decrement has been statistically significant for the stress and depression rates. Therefore, it is concluded that Ramadan fasting have a protective effect on human psychology. However, it needs to be more elaborated and confirmed through further investigations in the future.

References Références Referencias

1. Nursi S. The letters. The twenty ninth letter second section, which is the Second Treatise. On the Month of Ramadan. Available from: http://www.erisale.com /index.jsp?locale=en#content.en.202.457 Accesse d: 01.02.2023
2. Jackson JS, Boardman JD, Williams DR, Ellison CG. Religious involvement, stress, and mental health: Findings from the 1995 Detroit Area Study. Soc Forces2001; 80: 215–49. https://psycnet.apa.org/ doi/10.1353/sof.2001.0063
3. Unalacak M, Kara IH, Baltaci D, ErdemO, Bucaktepe PGE. Effects of Ramadan fasting on biochemical and hematological parameters and cytokines in healthy and obese individuals. *Metabolic syndrome and related disorders* 2011; *9*(2):157-61. https://doi.org/10.1089/met.2010.0084
4. Ozder A. Lipid profile abnormalities seen in T2DM patients in primary healthcare in Turkey: a cross-sectional study. *Lipids in health and disease* 2014;*13*(1):183. https://doi.org/10.1186/1476-511X-13-183
5. Ali M, Adams A, Hossain MA, Sutin D, Han BH. Primary care providers' knowledge and practices of diabetes management during Ramadan. *Journal of primary care & community health* 2016;7(1):33-7. https://doi.org/10.1177/2150131915601359
6. Gnanou JV, Caszo BA, Khalil KM, Abdullah SL, Knight VF, Bidin MZ.Effects of Ramadan fasting on glucose homeostasis and adiponectin levels in healthy adult males. *Journal of Diabetes & Metabolic Disorders*2015;*14*(1):55.https://doi.org/10.1186/s40 200-015-0183-9
7. Najafabadi MG, Nikoukar LR, Memari A, Ekhtiari H, Beygi S. "Does Ramadan fasting adversely affect cognitive function in young females?" Scientifica 2015;6. http://dx.doi.org/10.1155/2015/432428
8. Farooqa S, Nazara Z, Akhtera J, Irafna M, Subhanb F, Ahmedb Z, et al. Effect of fasting during Ramadan on serum lithium level and mental state in bipolar affective disorder. International Clinical Psychopharmacology 2010; 25:323–27. https://doi. org/10.1097/yic.0b013e32833d18b2
9. Javanbakht M, Ziaee Seyyed Alireza HS, Rahnama AL. Effect of Ramadan fasting on self-esteem and mental health of students. J Fundam Ment Health. 2010; 11:266–73.
10. Fond G, Macgregor A, Leboye, M, Michalsen A. Fasting in mood disorders: neurobiology and effectiveness. A review of the literature. Psychiatry *research* 2013; *209* (3:253-8. https://doi.org/ 10.1016/j.psychres.2012.12.018
11. Michalsen A. Prolonged fasting as a method of mood enhancement in chronic pain syndromes: a review of clinical evidence and mechanisms. Curr. Pain Headache Rep 2010;14: 80–7. https://doi.org/ 10.1007/s11916-010-0104-z
12. BaHammam AS, Almushailhi K, Pandi-Perumal SR, Sharif MM. Intermittent fasting during Ramadan: does it affect sleep? *Journal of sleep research* 2014; *23*(1):35-43.https://doi.org/10.1111/jsr.12076
13. Bilgel N, Bayram N. Turkish version of the depression anxiety stress scale (DASS-42): Psychometric properties. *Archives of Neuro-psychiatry/Noropsikiatri Arsivi* 2010; *47*:118-26. https://psycnet.apa.org/doi/10.4274/npa.5344
14. Kul S, Savas E, Ozturk ZA, Karadağ G. Does Ramadan fasting alter body weight and blood lipids and fasting blood glucose in a healthy population? A meta-analysis. J Relig Health 2014; 53(3):929–42. https://doi.org/10.1007/s10943-013-9687-0
15. Chamari K, Briki W, Farooq A, Patrick T, Belfekih T, Herrera CP. Impact of Ramadan intermittent fasting on cognitive function in trained cyclists: a pilot study. *Biology of sport* 2016; *33*(1): 49. https:// doi.org/10.5604/20831862.1185888
16. Tian HH, Aziz AR, Png W, Wahid MF, YeoD, Png ALC. Effects of fasting during Ramadan month on cognitive function in Muslim athletes. *Asian Journal of Sports Medicine* 2011; *2*(3):145-53.
17. Bahammam A. Does Ramadan fasting affect sleep? Int J Clin Pract, 2006; 60(12); 1631–7. https://doi.org /10.1111/j.1742-1241.2005.00811.x
18. Waterhouse J. "Effects of Ramadan on physical performance: chronobiological considerations," *British Journal of Sports Medicine* 2010;44(7):509–15. https://doi.org/10.1136/bjsm.2007.071712
19. Atkinson G, Edwards B, Reilly T, Waterhouse J. "Exercise as a synchroniser of human circadian rhythms: an update and discussion of the methodological problems," *European Journal of Applied Physiology* 2007; 99(4):331–41. https:// doi.org/10.1007/s00421-006-0361-z
20. Kadri N, Tilane A, El Batal M, Taltit Y, Tahiri SM, Moussaoui D. "Irritability during themonth of Ramadan," *Psychosomatic Medicine* 2000; 62(2): 280–5. https://psycnet.apa.org/doi/10.1017/S14611 45799001704
21. Dolu N, Yüksek A, Sizer A, Alay M, "Arousal and continuous attention during Ramadan intermittent fasting," *Journal of Basic and Clinical Physiology and Pharmacology* 2007; 18(4):315–22. https:// doi.org/10.1515/jbcpp.2007.18.4.315
22. Chtourou H, Hammouda O, Souissi H, Chamari K, Chaouachi A, Souissi N. The effect of Ramadan fasting on physical performances, mood state and perceived exertion in young footballers. *Asian Journal of Sports Medicine* 2011; *2*(3): 177. https:// dx.doi.org/10.5812/asjsm.34757
23. Kadri N, Mouchtaq N, Hakkou F, Moussaoui D. Relapses in bipolar patients: changes in social

rhythm?. *The International Journal of Neuropsychopharmacology* 2000; *3*(1):45-9.
24. Koushali AN, Hajiamini Z, Ebadi A, Bayat N, Khamseh F. Effect of Ramadan fasting on emotional reactions in nurses. *Iranian journal of nursing and midwifery research* 2013; 18(3):232.
25. Erdem O. The investigation of the effects of Ramadan fasting on the moodstate of healthy volunteer persons. Fam Pract Palliat Care, 2018; 3(1):1-6. https://doi.org/10.22391/fppc.398323.

Table 1: The socio demographic features of participants

		Did You Fast During Ramadan Month This Year? *			
		NO (n = 46) %	YES (n = 163) %	Total (n = 209) %	P **
Gender	Female	32.6	13.5	17.7	P >0.05
	Male	67.4	86.5	82.3	
Marital status	Single	21.7	17.8	18.7	P >0.05
	Married	78.3	82.2	81.3	
Do you smoke cigarette?	No	78.3	71.8	73.2	P >0.05
	Yes	21.7	28.2	26.8	
Do patients become more aggressive during Ramadan?	No	28.3	42.3	39.2	P >0.05
	Yes	71.7	57.7	60.8	
How did the number of patients who applied during Ramadan change according to the previous times of Ramadan?	Decreased	50.0	62.6	59.8	P >0.05
	It has not changed	43.5	33.1	35.4	
	Increased	6.5	4.3	4.8	
The mean age (min- max year)		37.0 ± 7.6 (25-64 year)	38.3 ± 7.6 (24-63 year)	38.0 ± 7.5 (24-64 year)	P >0.05
The mean year of professional experience		11.5 ± 7.1 (1-34 year)	12.7 ± 6.8 (1-34 year)	12.4 ± 6.9 (1-34 year)	P >0.05

**: Column percentage*

***: Chi square test or Mann whit ney U test was applied.*

Table 2: DASS score of the participants

Did you fast during Ramadan month this year?		DEPRESSION Total Score	ANXIETY Total Score	STRESS Total Score
NO(n=46)	Mean ±SS	9,4±8,4	7,6±7,1	13,4±8,8
	Median (min- max)	7,5(0-36)	6(0-34)	12(0-34)
YES(n=163)	Mean ±SS	6,6±6,1	5,2±4,7	10,3±6,5
	Median (min- max)	4 (0-30)	4 (0-23)	10 (0-34)
	P *	0,044	0,060	0,044

** Mann whit ney U test was applied*

Table 3: The mood of the participants according to DASS score and their fasting status

	DID YOU FAST DURING RAMADAN MONTH THIS YEAR?**							
	NO (n=46)	YES (n=163)		NO (n=46)	YES (n=163)		NO (n=46)	YES (n=163)
DEPRESSION*	%	%	ANXIETY*	%	%	STRESS*	%	%
Normal	54,3	73,0	Normal	58,7	74,8	Normal	63,0	79,1
Light	19,6	11,0	Light	10,9	8,0	Light	13,0	12,9
Middle	19,6	13,6	Middle	13,0	14,2	Middle	13,0	5,6
Forward	2,2	1,8	Forward	10,9	1,8	Forward	8,8	1,8
Very Forward	4,3	0,6	Very Forward	6,5	1,2	Very Forward	2,2	0,6
	OR=0,440 (0,224-0,865) P=0,016			OR=0,478 (0,241-0,948) P=0,032			OR=0,450 (0,222-0,913) P=0,025	

**: The other groups except the normal were combined and the Chi square test was applied.*

*** Column percentage*