Effect of Ramadan Fasting on the Quality of Life of Elderly Muslims

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ARTICLEINFO	ABSTRACT
Article type: Research Paper	**Introduction:** Ramadan fasting may affect the quality of life of elderly Muslims and cause some challenges. The present study aimed to assess the effect of Ramadan fasting on the quality of life of elderly Muslims.
	Methods: This observational-correlational study was conducted throughout the natural intervention of Ramadan fasting in 2016 when the length of daily fasting was about 16 hours. In total, 100 individuals aged more than 60 years were selected from the patients referring to the health centers in Rafsanjan, Iran via convenience sampling. Data were collected using the 12-item short-form survey of quality of life (SF-12) at three measurement time points before (T1), one day after (T2), and one month after Ramadan (T3). Data analysis was performed in SPSS version 18 using two-way repeated measures analysis of variance (ANOVA), and the P-value of less than 0.05 was considered significant.
	Results: A significant difference was observed in the total score of quality of life between the three measurement time points (T1: 47.02±14.15, T2: 50.76±17.06, T3: 51.53±16.79; P<0.0001).
	Conclusion: According to the results, the quality of life of elderly Muslims improved through Ramadan fasting.

Introduction

Muslims constitute a wide cultural group, and their population increases by 35% each year (1). With 1.2 billion followers, Islam is the second largest religion in the world after Christianity (2, 3). Ramadan is the ninth month of the lunar calendar and a holy month for Muslims around the world. Fasting during Ramadan is one of the five pillars of Islam (2). Fasting is an important religious belief and ritual of Muslims (4). All healthy adult Muslims must fast each year during the month of Ramadan (4, 5). In Ramadan fasting, Muslims take one meal before sunrise and keep their fast until sunset. During the day, they refrain from eating and drinking (6), as well as some other activities that break their fast (7). Such a lifestyle during Ramadan differs from the usual lifestyle of Muslims in the other months of the year (8). On average, the length of fasting is 10-19 hours per day depending on the seasons and geographical region (6).

Ramadan fasting is not mandatory for elders and patients if it is likely to adversely affect their health (1). Another exemption from fasting is fasting intolerance by the elderly (9). Nevertheless, the elderly mostly insist on fasting during Ramadan for a number of reasons, such as the habit of fasting from an early age, strong religious beliefs, the fear of being labeled as non-believers, and self-satisfaction and self-esteem by performing a religious duty (10). Healthcare providers should decide whether these individuals are able to fast and offer advice on safe fasting. Therefore, they must have adequate information in this regard (9).

The quality of life (QOL) of the elderly population is one of the challenges of the current century, which has attracted the attention of health policymakers. Geriatric care is considered optimum and proper only when it results in the prolongation of life, along with the improved QOL of the care receivers (11). Socioeconomic factors,

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demographic characteristics (12), dietary habits, literacy, and cultural beliefs could affect the QOL of the elderly (11).

Conflicting data have been proposed regarding the effects of Ramadan fasting on QOL. For instance, Teng et al. (2011) reported the adverse effects of limited calorie intake on QOL, health status, and mood (13), while Guillaume Fond (2013) observed that fasting could improve mood and QOL (14). In addition, Nugraha et al. (2017) reported that fasting improves fatigue, drowsiness, and QOL (15). These discrepancies imply the inadequate knowledge of healthcare professionals on the effects of Ramadan fasting (7). Moreover, previous studies have not investigated the effects of fasting in old age (16). Considering the Islamic culture and beliefs, the elderly often opt for fasting for the positive spiritual outcomes of this religious rite.

The present study aimed to evaluate the effect of Ramadan fasting on the QOL of elderly Muslims.

Materials and Methods
Research Design
This observational-correlational study was conducted at the healthcare centers located in Rafsanjan, Iran, and Patients were selected from the general population of Rafsanjan city. The study was performed at three measurement time points before, one day after, and one month after Ramadan in 2016. During this period, the length of fasting was about 16 hours per day.

Sample Population
The sample population included 100 patients who referred to the healthcare centers of Rafsanjan. The inclusion criteria were as follows: 1) Islamic religion (Shiite); 2) age of 60-80 years (both males and females); 3) ability to fast during Ramadan (minimum of three days); 4) Iranian or Afghan nationality and 5) ability to understand and speak Persian. The exclusion criteria of the study were a history of known psychosis (e.g., paraphrenia or schizophrenia), chronic obstructive pulmonary disease, cardiovascular diseases, and active gastrointestinal diseases (e.g., peptic ulcer).

Variable Measurement
The demographic data of the participants were collected and recorded at baseline, such as age, gender, nationality, and education level. QOL was measured using the 12-item short-form survey of quality of life (SF-12) at three measurement time

points before (T1), one day after (T2), and one month after Ramadan (T3). SF-12 consists of eight domains, including physical functioning (two items), physical role functioning (two items), emotional role functioning (two items), vitality (one item), mental health (two items), social functioning (one item), bodily pain (one item), and general health perceptions (one item). The items in this scale are scored based on three-, five- or six-point Likert scales. The raw scores are converted into the scale of 0-100 to compare the domains. Scores zero and 100 are indicative of the highest and lowest possible QOL, respectively. In addition to the scores of the SF-12 domains, the total QOL score was calculated based on the standard mean score of SF-12 (17). Montazeri et al. (2009) have previously assessed and confirmed the validity of the Persian version of the SF-12 using known-groups comparison and convergent validity, as well as its reliability based on internal consistency (18). In the mentioned study, the two-factor structure (physical and mental health) jointly explained 57.8% of the variance, confirming the validity and reliability of SF-12 for the measurement of health-related QOL in the Iranian population.

One day after Ramadan, we enquired about the number of the fasting days. At each measurement time points, the participants who had experienced severe issues or conditions affecting their health were excluded from the study. From 100 elderlies who were enrolled in the study, 92 cases completed the questionnaires at the measurement time points, and eight cases were excluded due to failure in referral to the study setting or our inability to make phone contact.

Statistical Analysis
Data analysis was performed in SPSS version 18 using descriptive statistics (mean, standard deviation, frequency, and percentage). In addition, two-way repeated measures analysis of variance (ANOVA) was used for the comparison of the QOL scores at each measurement time point between the categories of demographic characteristics. Within-subject comparison of the QOL scores across the three measurement time points was also performed using repeated measures ANOVA. In all the statistical analyses, the significance level was set at $P<0.05$.

Ethical Considerations
The study protocol was approved by the Ethics Committee of Rafsanjan University of Medical

Sciences (IR.RUMS.REC.1394.111), and written informed consent was obtained from the subjects prior to enrollment.

Results

In total, 92 elderly subjects participated in the study, including 33 males (35.9%) and 59 females (64.1%). The mean age of the subjects was 67.14±9.86 years. In terms of education level, the majority (n=53; 57.6%) were illiterate, seven subjects (7.6%) had primary education, 11 subjects (12%) had secondary education, 13 (14.1%) had a high school diploma, and seven (8.7%) had an academic degree. In addition, 52 participants (56.5%) were Iranian, and 40 (43.5%) were Afghan. The majority of the participants (62%) had fasted 5-30 times before, while the others had not experienced fasting.

Table 1. Comparing elderly people's QOL at the three measurement time points in different categories of their demographic characteristics

Variables	Time points	Categories	Mean±SD	*P value
Gender	Before	Female	41.46± 17.17	Measurement time points: P value < 0.0001
		Male	42.50 15.54	
	Immediately after	Female	46.90 ± 20.08	
		Male	47.98 ± 16.12	
	One month after	Female	46.81± 22.86	Gender: P value = 0.877
		Male	46.81 ±18.45	
Nationality	Before	Iranian	49.65±14.92	Measurement time points: P value < 0.0001
		Afghan	38.40 ± 16.11	
	Immediately after	Iranian	53.80 ±15.76	
		Afghan	44.42 ± 19.22	
	One month after	Iranian	55.51±16.33	Nationality: P value = 0.018
		Afghan	42.98 ± 22.14	
Ramadan Fasting	Before	Yes	47.02 ± 14.15	Measurement time points: P value < 0.0001
		No	39.40 ± 17.09	
	Immediately after	Yes	50.76±17.06	
		No	45.66±19.29	
	One month after	Yes	51.53±16.79	Fasting: P value = 0.159
		No	44.59 ± 22.85	
Educational Status	Before	Illiterate	38.81± 17.00	
		Primary	47.08 ±15.82	
		Secondary	45.31 ± 14.82	
		Diploma	55.55 ± 11.79	
		University	46.66 ± 0.000	Measurement time points: P value < 0.0001
	Immediately after	Illiterate	44.71 ± 19.94	
		Primary	57.50 ± 22.02	
		Secondary	48.75 ± 15.74	
		Diploma	62.50 ± 13.22	Educational status: P value = 0.347
		University	46.88 ± 0.000	
	One month after	Illiterate	43.19 ± 22.03	
		Primary	65.13 ± 31.07	
		Secondary	49.27 ± 17.75	
		Diploma	63.88± 19.15	
		University	57.08± 0.00	

* The two-way repeated measures analysis of variance (ANOVA)

According to the statistical analysis, the mean QOL score of the Iranian participants had a significant difference with the mean score of the Afghan participants (P=0.018). In addition, significant differences were observed between the three measurement time points regarding the mean score of QOL with the demographic characteristics of the subjects (P<0.0001) (Table 1).

The results of repeated measures ANOVA indicated significant differences between the three measurement time points regarding the mean scores of physical functioning, physical role functioning, emotional role functioning, mental health, general health perceptions, and the total score of QOL (P<0.05) (Table 2).

Discussion

In the current research, the QOL of the elderly increased one day after Ramadan compared to before Ramadan. Compared to before and one day after Ramadan, the QOL of the subjects was higher and lower at T3 (i.e., one month after Ramadan), respectively. This is inconsistent with the findings of Dube (2014), who evaluated the

correlation between the religious attitude and QOL of elderly individuals, reporting an inverse correlation between the variables (19). The discrepancy could be because in the study by

Dube, subjects with a lower economic status had better religious attitudes.

Table 2. Comparing the mean scores of different domains of QOL across the measurement time points

Domains	Time points	Mean±SD	*P value
Physical functioning	Before	34.82±22.96	0.0001
	Immediately after	47.91 ±34.75	
	One month after	44.94± 35.30	
Physical role functioning	Before	42.46 ± 24.45	0.004
	Immediately after	46.38 ± 29.25	
	One month after	40.15 ± 31.02	
Emotional role functioning	Before	48.10 ± 28.52	0.001
	Immediately after	55.85 ±22.27	
	One month after	48.89±29.43	
Vitality	Before	25.91 ± 23.71	0.06
	Immediately after	29.26 ± 23.17	
	One month after	28.35 ± 23.49	
Mental status	Before	47.32 ± 24.31	0.003
	Immediately after	48.80±23.81	
	One month after	51.93±23.24	
Social functioning	Before	47.91 ± 28.04	0.767
	Immediately after	47.32 ± 26.89	
	One month after	48.21 ± 24.78	
Bodily pain	Before	58.75 ± 22.35	0.819
	Immediately after	58.25 ± 21 .86	
	One month after	58.25± 20.91	
General health perceptions	Before	19.76± 24.28	0.0001
	Immediately after	33.43± 22.88	
	One month after	35.17± 23.75	
Total SF-12 score	Before	41.84± 16.50	0.0001
	Immediately after	47.29± 18.64	
	One month after	46.81 ± 21.24 2	

* The repeated measures analysis of variance (ANOVA)

Gender has been reported to be a determinant of QOL (20). According to a study conducted in Iran, women had lower QOL compared to men (21). Consistently, our findings indicated that the QOL of the female participants was lower compared to the males at the three measurement time points although the differences were not considered significant. On the other hand, previous studies have shown that factors such as age, gender, education level, and diseases may significantly contribute to the QOL of the elderly (22, 23). Lee Kyung Hee et al. (2020) also reported that the QOL scores of men were significantly higher compared to the scores of women (24).

According to our findings, the Iranian participants had higher QOL compared to their Afghan counterparts. A similar study indicated that Afghan immigrants had limited access to social services, modest income, and poor residential status in Iran, and elderly Afghans had to work hard due to these problems (25). Evidently, our findings did not undermine the effects of Ramadan fasting on the QOL of the

Afghan participant, and the obtained results in this regard could be attributed to the better living conditions of Iranians compared to Afghan immigrants.

Before Ramadan, the QOL of the participants who could successfully keep their fast was higher compared to those who did not fast in the present study. This could be due to the fact that the elderly who kept fasting had more profound religious beliefs. In this regard, previous findings have indicated that the power resulting from religious beliefs could positively influence health and wellbeing (26), and spiritual wellbeing could improve QOL (27).

An interesting finding of the present study was that Ramadan fasting had similar effects on the QOL of the elderly who kept fasting and those who did not fast. In other words, the QOL of these groups did not differ significantly. This is consistent with the results obtained by Nugraha (2017), who evaluated the impact of fasting on mood, fatigue, and health-related QOL in non-fasting and fasting groups and reported no

significant differences in these variables between the study groups (15). Therefore, it could be inferred that the spiritual atmosphere of Ramadan affects even the individuals who do not fast. Previous studies have indicated that the social climate of all Islamic communities becomes more spiritual during the holy month of Ramadan, and performing religious duties (e.g., abstaining from immoral acts, soul purification) affects the mental health of the community members (28).

According to the literature, the mean QOL score of 50±10 is considered as the accepted norm for the elderly population (29). However, the QOL of our participants was lower than the QOL score reported by the previous study (11). Other studies have also indicated that the QOL of the elderly is often below the norm, and immediate interventions are required to improve their QOL (30). Several sociodemographic factors may affect the QOL of the elderly, such as education level, income status, nutritional status, government support, living condition, access to welfare facilities, personality, beliefs, shortages, failures, and former experiences (12).

With the exception of the social functioning and physical pain domains, the mean scores of the other domains of QOL differed significantly across the three measurement time points in the present study. Although the QOL of the participants one month after Ramadan was slightly lower compared to one day after Ramadan, the value remained higher than the baseline QOL. Moreover, the score of the physical functioning domain was higher than the mental health. These findings could be due to the fact that despite the significant correlation between age and the prevalence of chronic diseases (31), high-quality healthcare services could decrease physical problems in the elderly and increase their coping abilities (29, 32). Consequently, our participants experienced fewer physical functioning problems as opposed to mental problems. Inconsistently, previous studies have indicated that the score of mental health was higher than physical functioning (11, 32), which could be attributed to the better social status and greater respect for the elderly in their families in the past (33, 34). Notably, the elderlies who experience loneliness and isolation less tend to have higher QOL (35). Our findings in this regard could be due to the inadequate family support of the elderly, which might have intensified their sense of isolation and loneliness (36).

Although the effects of Ramadan fasting on the vitality domain of QOL were rather long-lasting, the score of this domain was significantly lower than the other domains of QOL, denoting the need for immediate interventions in this regard. Furthermore, the relatively low score of the vitality domain could be due to difference in life priorities at different ages. For instance, while the youth mostly value vitality, happiness, work, and income, the elderly may prioritize their health status (37). However, lack of recreational facilities for the elderly, as well as their loneliness, might undermine the mental health of these individuals and decrease their vitality. Previous findings in this regard have indicated that due to the significant correlation between the mental health and QOL of the elderly (38), more constructive interventions are essential to the improvement of their QOL (39, 40).

The strengths of our study were the use of real world data and a population-based design, and the main limitation was not recording the dietary habits and physical activity of the subjects, which should be addressed in the further investigations in this regard.

Conclusion
This study aimed to evaluate the effects of Ramadan fasting on the QOL of elderly Muslims. According to the results, fasting was associated with improved QOL in the elderly Muslims.

Acknowledgements

Conflicts of Interest
None declared.

References
1. Alkandari J, Ramadan Maughan RJ, Roky R, Aziz AR, Karli U. The implications of Ramadan fasting for human health and well-being. J Sports Sci. 2012;30(sup1):S9-19.
2. Amin MEK, Abdelmageed A. Clinicians' Perspectives on caring for muslim patients considering fasting during Ramadan. J Relig Health. 2020;59(3):1370-87.

3. Habib A, Connor MJ, Boxall NE, Lamb BW, Miah S. Improving quality of life for Muslim patients requiring a stoma: A critical review of theological and psychosocial issues. Surg Pract. 2020;24(1):29-36.

4. Hazafa A, Rehman KU, Jabeen Z. The health impacts of Ramadan fasting. J Nutr Fast Health. 2019;7(3):116-20.

5. Kaushal K, Raina S. " Risk approach strategy" in diabetics on fasting-evidence base through narrative review with a special focus on Ramadan fasting. JOSH-Diabetes. 2015;3(1):11.

6. Amin ME, Chewning B. Predicting pharmacists' adjustment of medication regimens in Ramadan using the Theory of Planned Behavior. Res Social Adm Pharm. 2015;11(1):e1-15.

7. Pathy R, Mills KE, Gazeley S, Ridgley A, Kiran T. Health is a spiritual thing: perspectives of health care professionals and female Somali and Bangladeshi women on the health impacts of fasting during Ramadan. Ethn Health. 2010;16(1):43-56.

8. Mazidi M, Rezaie P, Karimi E, Nematy M. Effects of Ramadan Fasting on Lipid Profile: A Narrative Review. J Nutr Fast Health. 2014;2(2):57-61.

9. Abolaban H, Al-Moujahed A. Muslim patients in Ramadan: a review for primary care physicians. Avicenna J Clin Med. 2017;7(3):81.

10. Azzoug S, Mahgoun S, Chentli F. Diabetes mellitus and Ramadan in elderly patients. J Pak Med Assoc. 2015;65(5 Suppl 1):S33-6.

11. Agha nouri A, Mahmoudi M, Salehi H, Jafarian K. Quality of life in the elderly people covered by health centers in the urban areas of Markazi Province, Iran. Salmand. 2012;6(4):20-9.

12. Kazemi N, Sajjadi H, Bahrami G. Quality of life in iranian elderly. Salmand. 2019;13(Special Issue):518-33.

13. Teng NIMF, Shahar S, Manaf ZA, Das SK, Taha CSC, Ngah WZW. Efficacy of fasting calorie restriction on quality of life among aging men. Physiol Behav. 2011;104(5):1059-64.

14. Fond G, Macgregor A, Leboyer M, Michalsen A. Fasting in mood disorders: neurobiology and effectiveness. A review of the literature. Psychiatry Res. 2013;209(3):253-8.

15. Nugraha B, Ghashang SK, Hamdan I, Gutenbrunner C. Effect of Ramadan fasting on fatigue, mood, sleepiness, and health-related quality of life of healthy young men in summer time in Germany: A prospective controlled study. Appetite. 2017;111:38-45.

16. Altuntas YE, Gezen FC, Sahoniz T, Kement M, Aydin H, Sahin F, et al. Ramadan fasting in patients with a stoma: a prospective study of quality of life and nutritional status. Ostomy Wound Manage. 2013;59(5):26-32.

17. Bowling A, Windsor J. Discriminative power of the health status questionnaire 12 in relation to age, sex, and longstanding illness: findings from a survey of households in Great Britain. J Epidemiol Community Health. 1997;51(5):564-73.

18. Montazeri A, Vahdaninia M, Mousavi SJ, Omidvari S. The Iranian version of 12-item Short Form Health Survey (SF-12): factor structure, internal consistency and construct validity. BMC public health. 2009;9(1):341.

19. Dube S. Religious Attitude and Quality of Life among Rural Ageing Adults. 2014.

20. Yu T, Enkh-Amgalan N, Zorigt G, Hsu Y-J, Chen H-J, Yang H-Y. Gender differences and burden of chronic conditions: impact on quality of life among the elderly in Taiwan. Aging Clin Exp Res. 2019;31(11):1625-33.

21. Heydari J, Rouhani S, Mohammadpour RA. Aging populations' quality of life: An emerging priority for public health system in Iran. Life Sci J. 2012;9(4):1304-9.

22. Gobbens RJ, Remmen R. The effects of sociodemographic factors on quality of life among people aged 50 years or older are not unequivocal: comparing SF-12, WHOQOL-BREF, and WHOQOL-OLD. Clinical interventions in aging. 2019;14:231.

23. Su S-W, Wang D. Health-related quality of life and related factors among elderly persons under different aged care models in Guangzhou, China: a cross-sectional study. Qual Life Res. 2019;28(5):1293-303.

24. Lee KH, Xu H, Wu B. Gender differences in quality of life among community-dwelling older adults in low- and middle-income countries: results from the Study on global AGEing and adult health (SAGE). BMC Public Health. 2020;20(1):114.

25. Takbiri A, Takian A, Foroushani AR, Jaafaripooyan E. The challenges of providing primary health care to Afghan immigrants in Tehran: a key global human right issue. Int J Hum Rights Healthc. 2020.

26. Kapri A, Kathpalia J. Impact of spirituality on well-being of old aged people. Indian Journal of Health and Wellbeing. 2019;10(4-6):129-31.

27. Hannan M, Hidayat S. Spiritual Status Related to Life Quality Of Elderly. Wiraraja Medika: Jurnal Kesehatan. 2020;10(2):6-12.

28. Nasiri M, Lotfi A. Effect of Fasting on Spiritual Health, Mental Health, and Control of Aggression. J Nutr Fast Health. 2020;8(3):169-75.

29. Nejati V, Ahmadi K, Sharifian M, Shoaee F. Comparing quality of life dimension in different age decades: prediction for aging. J Fasa Univ Med Sci. 2012;1(4):227-32.

30. Farhadi A, Foroughan M, Mohammadi F. The Quality of Life Among Rural Elderlies; A Cross-sectional Study. Salmand. 2011;6(2):0-0.

31. Maghsoudi A. The study of prevalence of chronic diseases and its association with quality of life in the elderly of Ewaz (South of Fars province), 2014. Navid No. 2016;18(61):35-42.

32. Rouhani S, Zoleikani P. Socioeconomic status and quality of life in elderly people in rural area of Sari-Iran. Life Sci J. 2013;10(2s).

33. George LK. Still happy after all these years: Research frontiers on subjective well-being in later life. J Gerontol B Psychol Sci Soc Sci. 2010;65(3):331-9.

34. Enkvist Å, Ekström H, Elmståhl S. Associations between cognitive abilities and life satisfaction in the oldest-old. Results from the longitudinal population study Good Aging in Skåne. Clin Interv Aging. 2013;8:845.

35. Beridze G, Ayala A, Ribeiro O, Fernández-Mayoralas G, Rodríguez-Blázquez C, Rodríguez-Rodríguez V, et al. Are Loneliness and Social Isolation Associated with Quality of Life in Older Adults? Insights from Northern and Southern Europe. Int J Environ Res Public Health. 2020;17(22):8637.

36. Pires-Oliveira DAdA, Gil AWdO, Oliveira LCd, Bento FM, Mendes CST, Dos Santos JPM. Analysis of quality of life in elderly practitioners of physical activity and relationship with risk of falls. formerly Terapia Manual. 2014;12(x):143-8.

37. Al-Hourani H, Atoum M. Body composition, nutrient intake and physical activity patterns in young women during Ramadan. Singapore Med J. 2007;48(10):906.

38. Akai S, Kaur R. Quality of Life and its Effect on Mental Health among Elderly People. Research & Reviews: A Journal of Health Professions. 2017;7(1):19-22.

39. Kishita N, Backhouse T, Mioshi E. Nonpharmacological interventions to improve depression, anxiety, and quality of life (QoL) in people with dementia: an overview of systematic reviews. J Geriatr Psychiatry Neurol. 2020;33(1):28-41.

40. Soósová MS. Determinants of quality of life in the elderly. Cent Eur J Nurs Midw. 2016;7(3):484-93.