Original Article

Association between Sexual Function and Marital Relationship in Patients with Ischemic Heart Disease

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Received 03 September 2013; Accepted 01 April 2014

Abstract

Background: *Patients with ischemic heart disease (IHD) may report difficulties with sexual function and marital relationship. However, there is a dearth of studies focusing on the association between these aspects in IHD patients. The present study sought to assess the association between sexual function and marital relationship among IHD patients and also test the effect modification of gender, education level, and marital distress on the above association.*

Methods: *In this cross-sectional study, 551 patients with IHD were enrolled and their sexual function and marital relationship quality were assessed with the Relation and Sexuality Scale (RSS) and Revised Dyadic Adjustment Scale (RDAS), respectively. Association between marital relationship quality and sexual function was assessed with respect to gender, education level, and marital distress.*

Results: *Most participants (72%) were men at a mean age of 57 ± 11 (range = 36-80) years. Total sexual function was significantly correlated with total marital quality (r = -0.28), marital consensus (r = -0.17), marital coherence (r = -0.19), marital affection expression (r = -0.22), and marital satisfaction (r = -0.25). Total marital quality also showed a significant association with sexual fear (r = -0.11). These associations were moderated by gender, education level, and marital distress level.*

Conclusion: *Among the IHD patients, sexual function and marital relationship quality showed a mild to moderate association. Association between sexual function and marital relationship quality, however, may depend on gender, education level, and marital distress level.*

J Teh Univ Heart Ctr 2014;9(3):124-131

This paper should be cited as: Assari S, Moghani Lankarani M, Ahmadi K, Kazemi Saleh D. Association between Sexual Function and Marital Relationship in Patients with Ischemic Heart Disease. J Teh Univ Heart Ctr 2014;9(3):124-131.

Keywords: *Sexual behavior • Spouses • Coronary artery disease*

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Introduction

Sexual function and marital relationship quality are two fundamental aspects of social health,[1] and both may be affected among patients with ischemic heart disease (IHD).[2-4] Sexuality is an important component of the quality of life in the general population[5] and in patients with IHD. Heart disease affects patients' sexual life through both organic and psychological mechanisms.[3] IHD negatively impacts the frequency of and satisfaction with sexual activity and begets sexual dysfunction.[6]

Marital relationship quality of patients with chronic diseases seems to be very important given its influence on patients' quality of life,[7] adjustment with the disease,[8] compliance,[9] and long-term outcomes.[10] Marital relationship quality of patients also influences children's[11] and spouses' quality of life and psychological well-being.[12] In IHD, marital relationship quality affects patients' quality of life and their morbidity and mortality.[2, 4, 6]

Given the divergent results of the studies assessing the association between sexual function and marital relationship quality[13-15] and the paucity of data on this association among patients with IHD, the present study aimed to evaluate the association between sexual function and marital relationship quality among patients with IHD. The study also sought to determine whether this association differs based on gender, educational level, and marital distress level.

Methods

Performed at Baqiyatallah Hospital in Tehran in 2006, this cross-sectional study included 630 consecutive patients with documented IHD (defined by a > 70% stenosis of at least 1 major coronary artery). The subjects' demographic data, comprised of age, gender, family income, education level, and place of residence, as well as their clinical data, history of myocardial infarction, diabetes (defined as a history of fasting blood sugar > 126 mg/dL or glycosylated hemoglobin > 7.5%), hypertension (defined as a history of systolic blood pressure > 160 mmHg or diastolic blood pressure > 90 mmHg), hyperlipidemia (defined as cholesterol ≥ 200 mg/dl and triglyceride ≥ 200 mg/dl), smoking, and body mass index, were registered. Of all those invited to participate, 535 persons agreed to answer the questions on sexuality; the remaining 95 patients were not significantly different from them in terms of age, gender, education level, income level, and coronary stenosis severity (p value > 0.05). Written informed consent was obtained from all the patients, and the study was approved by the Ethics Committee of Baqiyatallah Hospital.

The patients' relationship and sexuality from the onset of IHD was evaluated using a translated-into-Farsi 10-item version of the Relation and Sexuality Scale (RSS) questionnaire.[16, 17] The RSS has been developed for women, but the items in this questionnaire are not gender-dependent and have been used previously for assessing relationship and sexuality in both genders.[18] In addition to the RSS total score, the three subscores of sexual function [RSS-Fc (0-16)], sexual frequency [RSS-Fq (0-12)], and sexual fear [RSS-Fr (0-8)] were assessed. The Cronbach Alpha was 0.802 for the total RSS, 0.861 for the RSS-Fc, 0.820 for the RSS-Fq, and 0.769 for the RSS-Fr.

All the subjects were also asked to complete a Farsi version[19, 20] of the Revised Dyadic Adjustment Scale (RDAS).[21] The RDAS consists of fourteen items evaluating the couple's agreement on decisions and appropriate behavior, marital satisfaction, and marital cohesion. The RDAS scores range between 0 and 69, with a low score indicating a distressed dyadic adjustment. The RDAS provides a total score (RDAS-T) and the four sub-scores of dyadic consensus (RDAS-DC), which assesses the degree to which the couple agrees on matters of importance to their relationship; affective expression (RDAS-AE), which appraises the scale of affection demonstration; dyadic satisfaction (RDAS-DS), which evaluates the extent to which the couple is satisfied with the relationship; and dyadic cohesion (RDAS-DCh), which determines the level of closeness and shared activities experienced by the couple.[21] The patients were categorized according to the total score of 48 as a cut-off point so as to distinguish the maritally distressed (RDAS < 48) from the non-distressed ones (RDAS ≥ 48).[22] The RSS-T and its subcategories were evaluated in each group separately. The Cronbach alpha was found to be 0.802, 0.683, 0.779, 0.827, and 0.836 for the total score, marital consensus, affective expression, marital satisfaction, and marital cohesion, respectively.

The subjects were assessed for comorbidities using the modified Ifudu comorbidity index, which is a numerical self-reporting measure designed to evaluate comorbidities in different diseases. It evaluated the presence of eleven chronic illnesses; namely visual impairment, low back pain, spine or joint disorders, other musculoskeletal disorders, genitourinary diseases, hematologic diseases, infections, chronic respiratory diseases, liver, pancreas or biliary diseases, limb amputation (peripheral vascular diseases), neurologic diseases, and non-ischemic heart diseases. Each entity was scored from 0 to 3 for the absence of disease to the presence of severe disease, respectively. The total comorbidity index was then calculated by summing points for all the eleven organ systems.[23] Total scores ranged between 0 and 33, with a higher index denoting greater comorbidity. Structured clinical interviews for the diagnosis of DSM-IV sexual disorders were done.

For the statistical analyses, the statistical software SPSS version 13.0 for Windows (SPSS Inc., Chicago, IL) was used. The normality of the variables was checked with the Kolmogorov-Smirnov tests. Because some variables such

as the RDAS-AE (p value < 0.001), RDAS-DS (p value = 0.006), RSS-Fq (p value < 0.001), and RSS-Fr (p value < 0.001) had no normal distribution, nonparametric tests were employed. The association between sexual function and marital relationship quality was examined with the Spearman correlation test. The predictors of the RDAS-T and RSS-T were determined via a multivariate regression analysis, with the input variables being body mass index, age, gender, family income, education level, and hypertension. The RDAS-T predictors were indentified by inputting the RSS-T as a variable, and the RSS-T predictors were uncovered by inputting the RDAS-T as a variable. A p value < 0.05 was considered significant.

Results

Patients

The study population consisted of 396 (71.9%) men and 155 (28.9%) women at a mean age of 56.98 ± 10.60 (range = 36-80) years. Table 1 depicts the clinical and sociodemographic characteristics of the participants.

RSS and RDAS association

Total marital function was correlated with sexual fear and total sexual function. There was also a association between total sexual function and marital consensus, affective expression, marital satisfaction, and marital cohesion. Marital consensus and affective expression were also correlated

Table 1. Clinical and sociodemographic characteristics of the patients*

	Gender		Total (n=551)	P value		Gender		Total (n=551)	P value
	Men (N=396)	Women (N=155)				Men (N=396)	Women (N=155)		
Age (y)	57.21±11.34	56.56±9.39	57.02±10.81	0.529	TG				< 0.001
					≥ 200 mg/dl	130 (32.8)	27 (17.2)	156 (28.4)	
Education				< 0.001	< 200 mg/dl	266 (67.2)	128 (82.8)	395 (71.6)	
Illiterate	59 (15.0)	65 (41.9)	124 (22.6)						
Primary school	94 (23.9)	61 (39.4)	155 (28.2)		LDL				< 0.001
Diploma	167 (42.4)	27 (17.4)	194 (35.3)		≥ 160 mg/dl	84 (21.2)	3 (1.9)	87 (15.7)	
University	74 (18.8)	2 (1.3)	76 (13.8)		< 160 mg/dl	312 (78.8)	152 (98.1)	464 (84.3)	
Family income				< 0.001	HDL				< 0.001
< 200 $/month	91 (23.0)	67 (43.2)	158 (28.7)		≥ 35 mg/dl	227 (57.3)	113 (72.9)	341 (61.8)	
200 -300 $/ month	209 (52.8)	73 (47.1)	282 (51.2)		< 35 mg/dl	169 (42.7)	42 (27.1)	210 (38.2)	
> 300 $/month	96 (24.2)	15 (9.7)	111 (20.1)						
					DM				0.396
BMI (kg/m^2)				0.004	≥ 126 mg/dl	156 (39.4)	55 (35.5)	211 (38.3)	
≤ 25	175 (44.2)	47 (30.3)	222 (40.3)		< 126 mg/dl	240 (60.6)	100 (64.5)	340 (61.7)	
25.1 - 29.9	143 (36.1)	61 (39.4)	204 (37.0)						
≥ 30	78 (9.7)	47 (30.3)	125 (22.7)		COPD				0.136
					Existing	45 (11.4)	11 (7.2)	56 (10.2)	
Vessel				< 0.001	Normal	351 (88.6)	144 (92.8)	495 (89.8)	
SVD	100 (25.3)	68 (43.9)	168 (30.5)						
2VD	96 (24.3)	46 (29.7)	143 (25.9)		Menopause				0.001
3VD	200 (50.4)	41 (26.5)	240 (43.6)		Non-menopause		41 (26.4)		
					Menopause		114 (73.6)		
Cholesterol				0.208					
≥ 200 mg/dl	161 (40.7)	54 (35.0)	215 (39.1)						
< 200 mg/dl	235 (59.3)	101 (65.0)	336 (60.9)						

*Data are presented as mean±SD or n (%)

BMI, Body mass index; SVD, Single-vessel disease; 2VD, Double-vessel disease; 3VD, Triple-vessel disease; TG, Triglyceride; LDL, Low-density lipoprotein; HDL, High-density lipoprotein; DM, Diabetes mellitus; COPD, Chronic obstructive pulmonary disease

with sexual frequency and sexual fear. In addition, there was a association between marital satisfaction and sexual function and sexual frequency. Finally, another association was found between marital cohesion and sexual frequency. These associations were mild to modest considering their Spearman's rho (Table 2).

The associations between marital and sexual scores were similar between the distressed and non-distressed patients, with the following few exceptions: affective expression and sexual frequency were correlated only in the distressed group (rho = -0.262; p value = 0.006); marital cohesion was linked to the RSS-T only in the distressed patients (rho = -0.192; p value = 0.047); and affective expression and sexual function were associated in the non-distressed patients (rho = -0.146; p value = 0.006). There were also some differences in this regard between the men and women; while the RSS-T was tied to all the RDAS subscores in both women and men, the RSS-T was not significantly correlated with marital consensus (p value = 0.169) or marital satisfaction (p value = 0.221) in the men. The associations between sexual function and the RDAS subscores were different between the men and women except for marital cohesion, which had associations neither in the men nor in the women. Sexual frequency was correlated with all the RDAS subscores in both men and women with the exception of marital satisfaction (p value = 0.339) in the men. The association patterns were the same in the men and women for the associations between the RSS-Fr and RDAS subscores except that sexual fear was only significantly associated with the RDAS-T (rho = -0.167; p value = 0.003), marital consensus (rho = -0.160; p value = 0.004), and marital satisfaction (rho = -0.199; p value < 0.001) in the men (Table 2). Sexual disorders and comorbidities attributed to each gender have been shown in Tables 3 and 4.

Factors associated with marital satisfaction

The multivariate regression method demonstrated that education level (Beta = -0.135; p value = 0.01), family income (Beta = -0.107; p value = 0.041), number of sexual disorders (Beta = 0.212; p value = 0.000), gender (Beta = 0.245; p value < 0.001), and the RDAS-T (Beta = -0.272; p value < 0.001) were the predictors of the RSS-T (R = 0.32, R^2 = 0.119, F = 19.26; p value < 0.001) (Table 5).

Table 2. Association between RDAS and RSS and their subscores based on gender and marital distress

	RSS-T	RSS-Fc	RSS-Fq	RSS-Fr		RSS-T	RSS-Fc	RSS-Fq	RSS-Fr
All patients					Female				
RDAS-T	-0.214***	-0.078	-0.292***	-0.106*	RDAS-T	-0.363***	-0.210*	-0.423***	-0.048
RDAS-DC	-0.141**	-0.056	-0.183***	-0.120*	RDAS-DC	-0.263**	-0.153	-0.250**	-0.079
RDAS-AE	-0.135**	-0.064	-0.234***	-0.360***	RDAS-AE	-0.187*	-0.045	-0.330***	-0.182*
RDAS-DS	-0.176***	-0.124**	-0.160***	-0.089	RDAS-DS	-0.313***	-0.295**	-0.280**	0.074
RDAS-DCh	-0.186***	-0.044	-0.286***	-0.031	RDAS-DCh	-0.284**	-0.057	-0.401***	-0.073
Distressed					High school diploma or lower				
RDAS-T	-0.095	-0.024	-0.240*	-0.013	RDAS-T	-0.269***	-0.103	-0.350***	-0.094*
RDAS-DC	-0.086	-0.160	-0.019	-0.033	RDAS-DC	-0.200***	-0.091	-0.233***	-0.082
RDAS-AE	-0.058	-0.157	-0.262**	-0.296**	RDAS-AE	-0.211***	0.026	-0.309***	-0.333***
RDAS-DS	-0.126	-0.156	-0.104	-0.174	RDAS-DS	-0.215***	-0.116	-0.220***	-0.100*
RDAS-DCh	-0.192*	-0.136	-0.193*	-0.121	RDAS-DCh	-0.214***	-0.067	-0.316***	-0.036
Non-distressed					University qualifications				
RDAS-T	-0.040	-0.034	-0.132*	-0.022	RDAS-T	-0.228*	-0.010	-0.270*	-0.375**
RDAS-DC	-0.026	-0.014	-0.042	-0.055	RDAS-DC	-0.212	-0.084	-0.213	-0.274*
RDAS-AE	-0.004	-0.146**	-0.036	-0.356***	RDAS-AE	-0.322**	-0.098	-0.246**	-0.530***
RDAS-DS	-0.003	-0.024	-0.044	-0.054	RDAS-DS	-0.201	-0.133	-0.075	-0.259*
RDAS-DCh	-0.031	-0.059	-0.165**	-0.058	RDAS-DCh	-0.037	0.117	-0.177	-0.152
Male									
RDAS-T	-0.119*	0.017	-0.204***	-0.167**					
RDAS-DC	-0.076	0.008	-0.136*	-0.160**					
RDAS-AE	-0.116	0.106	-0.203***	-0.428***					
RDAS-DS	-0.068	-0.001	-0.053	-0.199***					
RDAS-DCh	-0.123*	-0.011	-0.215***	-0.041					

RDAS, Revised dyadic adjustment scale; RSS, Relationship and sexuality scale; RSS-T, Relationship and sexuality scale-total; RSS-Fc, Relationship and sexuality scale-function; RSS-Fq, Relationship and sexuality scale-frequency; RSS-Fr, Relationship and sexuality scale-fear; RDAS-T, RDAS total; RDAS-DCs, RDAS dyadic consensus; RDAS-AE, RDAS affection expression; RDAS-DS, RDAS dyadic satisfaction; RDAS-DCh, RDAS dyadic coherence

*P < 0.001

**P < 0.01

***P < 0.05

Table 3. Frequency of sexual disorders among men and women with ischemic heart disease*

Sexual disorder	Gender	
	Men (n=396)	Women (n=155)
Both genders		
Libido disorder		
No	270 (75.0)	37 (26.1)
Yes	90 (25.0)	105 (73.9)
Orgasm disorder		
No	296 (82.2)	89 (62.7)
Yes	64 (17.8)	53 (37.3)
Arousal disorder		
No	283 (78.6)	109 (76.8)
Yes	77 (21.4)	33 (23.2)
Men		
Ejaculation disorder		
No	31 (8.6)	
Yes	329 (91.4)	
Erectile disorder		
No	66 (18.3)	
Yes	294 (81.7)	
Women		
Dyspareunia disorder		
No		136 (95.8)
Yes		6 (4.2)
Vaginal lubrication disorder		
No		120 (84.5)
Yes		22 (15.5)
Both genders		
Number of sexual disorders		
0	7 (1.9)	26 (18.3)
1	43 (11.9)	52 (36.6)
2	197 (54.7)	35 (24.6)
3	58 (16.1)	19 (13.4)
4	35 (9.7)	10 (7.0)
5	20 (5.6)	0

*Data are presented as n (%)

Table 4. Frequency of medical comorbidities for men and women with ischemic heart disease

Comorbidities	Gender	
	Men (n=396)	Women (n=155)
Non-ischemic cardiac disorders		
No	207 (63.3)	59 (45.0)
Yes	120 (36.7)	72 (55.0)
Pulmonary diseases		
No	260 (79.5)	105 (80.2)
Yes	67 (20.5)	26 (19.8)
Neurologic diseases		
No	215 (65.7)	67 (51.1)
Yes	112 (34.3)	64 (48.9)
Musculoskeletal disorders		
No	252 (77.1)	50 (38.2)
Yes	75 (22.9)	81 (61.8)
Infectious diseases		
No	278 (85.0)	85 (64.9)
Yes	49 (15.0)	46 (35.1)
Endocrine diseases		
No	295 (90.2)	104 (79.4)
Yes	32 (9.8)	27 (20.6)
Hematologic diseases		
No	277 (84.7)	52 (39.7)
Yes	50 (15.3)	79 (60.3)
Low back pain		
No	158 (48.3)	22 (16.8)
Yes	169 (51.7)	109 (83.2)
Visual disorders		
No	265 (81.0)	107 (81.7)
Yes	62 (19.0)	24 (18.3)
Amputation (due to vascular disorders)		
No	321 (98.2)	129 (98.5)
Yes	6 (1.8)	2 (1.5)
Urogenital disorders		
No	282 (86.2)	95 (72.5)
Yes	45 (13.8)	36 (27.5)
Comorbidity count (0 - 11)		
0.00	33 (10.1)	4 (3.1)
1.00	82 (25.1)	6 (4.6)
2.00	63 (19.3)	14 (10.7)
3.00	57 (17.4)	23 (17.6)
4.00	46 (14.1)	22 (16.8)
5.00	24 (7.3)	26 (19.8)
6.00	22 (6.7)	36 (27.5)

Predictors of sexual function

The multivariate regression method also showed that gender (Beta = -0.221; p value < 0.001), education level (Beta = -0.131; p value = 0.009), and the RSS-T (Beta = -0.253; p value < 0.001) were the predictors of the RDAS-T (R = 0.32, R2 = 0.117, F = 19.21; p value < 0.001) (Table 5).

Table 5. Regression analysis of Relation and Sexuality Scale (RSS) and Revised Dyadic Adjustment Scale (RDAS)

	B	Beta	95 % CI	P value
Outcome: sexual function				
Marital function	-0.108	-0.272	-0.142 to -0.073	< 0.001
Education	-0.409	-0.135	-0.720 to -0.098	0.010
Family income	-0.659	-0.107	-1.291 to -0.027	0.041
Outcome: marital function				
Sexual function	-0.639	-0.253	-0.869 to -0.409	< 0.001
Gender	-5.385	-0.221	-7.768 to -3.001	< 0.001
Education	-1.000	-0.131	-1.747 to -0.254	0.009

B, Unstandardized regression coefficient; Beta, Standard regression coefficient; CI, Confidence interval

Discussion

The present cross-sectional study showed a mild to moderate association between sexual relation and marital quality among IHD patients. Our results demonstrated links between sexual relation and the degree to which the patient was satisfied with his/her relationship and the level of closeness and shared activities with his/her spouse. These associations varied based on gender, education level, and marital distress level.

Although it is still a matter of debate, the existing medical literature abounds with reports on the association between marital relationship quality and sexual function in the general population and in patients with some chronic conditions. Nevertheless, precious little information is currently available on the association between these aspects in IHD patients.[24-26] Studies have suggested that improvement of sexual function may lessen marital conflicts,[27-31] which in turn can facilitate the treatment of sexual disorders. The results of these studies are in favor of the presence of a association between sexual function and marital relationship quality. However, there are studies showing opposite results.[13-15] It is unclear why and how a significant proportion of couples with sexual dysfunction report having a good marital relationship[30] or couples with no sexual dysfunction may not be satisfied with their marital relationship quality.[31]

In line with our findings, which suggested a association between sexual relation frequency and relationship satisfaction, a study revealed that having sexual relations fewer than 10 times per year was associated with reduced marital satisfaction and survival.[32, 13] The presence of fear of sexual relationship (RSS-Fr) among IHD patients may reduce sexual engagement and sexual and marital satisfaction.

In patients with IHD, sexual activity decreases for several reasons,[33] including, but not limited to, sexual disorders (e.g. erectile dysfunction) or fear of intercourse (e.g. fear of possible failure during intercourse). Erectile dysfunction shares mutual vascular risk factors with IHD, as they are both manifestations of a systemic vascular disease.[34] Fear of failure during intercourse and fear of a cardiac event secondary to intercourse may result in intercourse avoidance.[34, 35]

There is no doubt that the main focus of our study; i.e. the association between sexual function and marital relationship quality in IHD patients, requires further investigation. Nonetheless, we believe that cardiologists should take heed of this association, for sexual problems can diminish the quality of life and life satisfaction in couples.[36, 37] Moreover, a good marital relationship quality is known to provide a potent buffering support on stresses in IHD patients, thus enhancing their quality of life and reducing their mortality rate.[38]

Although level of education was a predictor of both marital relationship quality and sexual function, gender was only a predictor of marital relationship quality, but not of sexual function. Men and women are different with respect to their sexuality, especially their sexual disorders. Review of literature shows that most of the studies on sexuality in IHD patients have focused on men and few have enrolled women or both genders.[39] Needless to say, studies enrolling both genders can enrich data on the sexuality of women with IHD. These assessments could also provide interesting comparisons between the sexual function of both genders.

Association between sexual function and marital relationship quality varied based on the education level of the IHD patients in the present study. Associations of total sexual function and frequency of sexual intercourse were significant in all the sub-scores of marital relationship quality in those with lower education levels. In the patients with higher education levels, however, the total sexual function and frequency of sexual intercourse were only tied to the extent to which the couples agreed on matters of importance to their relationship, the degree to which the couples were satisfied with their relationship, and the level of closeness experienced by the couples. Association between sexual fear and function and marital relationship quality was also different in the individuals with different levels of education. Whereas the patients with higher education levels showed some association between their sexual function and marital relationship quality, the association was stronger between the sub-scores of marital relationship quality and sexual function. In our extensive literature search, we found no evaluation of the effect of education on the relationship between sexual function and marital relationship quality. Although many studies have demonstrated that individuals

with lower education levels have more problems regarding their sexuality,[40] this still seems to be a matter of debate.[41] Our findings chime in with those observations in that in our study population, a higher level of education was linked with better sexual function (data not shown).

The current study had a few limitations. Although it was beyond the scope of our study, it is crucial to note that cultural factors and gender roles may have a profound impact on sexual and marital satisfaction. Illustration of a causal relationship between marital relationship quality and sexual function was beyond the scope of the current study, as we used a cross-sectional design. Our evaluations also did not assess sexual function and satisfaction perceived by the spouse. Another limitation may include defining diabetes as a history of FBS > 126 mg/dl and hypertension as a systolic blood pressure > 160 mmHg. In addition, sexual function, but not disorders, was considered as the outcome. Finally, history of sexual function and marital relationship before the development of IHD was not taken into account in this investigation.

Conclusion

Considering the divergent results of studies assessing the association between sexual function and marital relationship quality in the general population, the present study documented this association among IHD patients, albeit with different patterns based on gender, education level, and marital distress level.

Acknowledgements

This study was supported by Baqiyatallah University of Medical Sciences. The authors would like to gratefully thank Naghizadeh MM. for his kind statistical and methodology consultations. Baqiyatallah University of Medical Sciences funded the study.

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