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Quality of life in patients with sinonasal diseases

Arabic adaptation of RSDI questionnaire - Methodological study

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Objective: To evaluate the quality of life and the degree of disability in adult patients with different sinonasal diseases using standard symptom based diagnostic measuring tool, Rhinosinusitis Disability Index - Arabic version (RSDI).

Methods: Eighty one patients (men45, women36) with sinonasal diseases were enrolled in the study, and their disability was evaluated using Arabic version of the disease specific standard RSDI questionnaire. The study was carried out at Ibn Sina General Hospital in the period between January 2014 and June 2017.

Results: The total number of the patients with sinonasal diseases was 81(range: 18 to 45 years, mean 21.5±5.6 years, males 45 (55.6%) females 36 (44.4%), ratio 5:4), the return rate of completed questionnaires was 100%, the majority of patients were aged between 20-40 years. Differences of mean scores between males and females in patients with different SNDs were clear in functional, physical, and emotional domains and were statistically significant. Significant differences were found in questions relating to nasal obstruction, avoidance of travelling, negative outlook on the world, depression, fatigue, irritability, sleep disturbance, smell and taste senses in both sexes, P value <0.05. Self-rated severity and high degree of disability from SNDs was observed in chronic rhinosinusitis. Mild degree of impact the SNDs was the highest in patients who have none allergic rhinitis and others.

Conclusion: Arabic RSDI version is a valuable and reliable tool for the evaluation of QoL and assessment of the degree of disability in patients with SNDs.

Keywords: rhinosinusitis disability index, sinonasal diseases, rhinitis, sinusitis, quality of life.

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Introduction

Health related quality of life questionnaires are evaluation tools widely used in recent years as a subjective methodological diagnostic and evaluation tools beside clinical objective examination. They are mainly utilized to assess the patients subjective view and opinion on his / her status and treatment outcomes.

Sinonasal diseases (SNDs) are the most common health problems and diseases affecting both sexes at any age. While most of them are non-life threatening conditions that can impair psychological, social, and emotional aspects of the patients worsening the quality of life others can have serious life threatening intracranial complications.

SNDs have the potential to cause significant interruption on work performance and daily activities [1] hence the need for specialized medical care.

Quality of life (QoL) measuring seems to be more important to the physician as part of clinical assessment and perhaps more important than it is for the patient.

In recent times QoL assessment has become an important aspect of patient management [2] and therefore evaluation of the impact of SNDs on the QoL has become an integral part of the diagnostic protocol and post treatment assessment. [3]

Diseases of the nose and paranasal sinuses affect both the physical and emotional aspects of the patients leading to

interruption of their work or daily activities. [1] This handicap requires special medical intervention and help.

Clinical examination of a patient with SNDs is incomplete without assessing the psychological and social impact of SNDs, for this purpose many questionnaires were developed by investigators to evaluate the QoL of the patients with diseased nose and sinuses.

In 1997. Benninger Micheal developed and validated a specific questionnaire for rhinosinusitis, which was defined as Rhinosinusitis Disability Index (RSDI) that aimed at evaluating the self-perception of the incapacitating effects caused by SNDs. [4]

The original English version has been translated into several languages and cultures, such as Moroccan, Nigerian. and Turkish. [5-7]

On international and local literature review there is no similar questionnaire done in the Arabic language yet to evaluate the self-perceived effects of SNDs. The main goal of this study is to translate, validate, and culturally adapt the RSDI for use in the Arabic-speaking population in the Arab world and to present our results of its contribution in patients with diseased nose and sinuses (**Appendix 1,2**).

Routine clinical examination of the patients suffering from SNDs is not enough to establish the final diagnosis and disability. [8]

The evaluation is incomplete without evaluating the psychological and social aspects of the disease on the patient. Absence of the study of the impact of SNDs on QoL is one of the major mistakes that can be done by a rhinologist.

Many questionnaires mainly in English language and later translated to other languages were developed to serve this purpose. [9]

Up to the time of the study based on literature review, this is the first study of its kind to utilize the Arabic version of the original questionnaire rhinosinusitis disability index (RSDI). [5]

A number of studies were carried out to assess the effect of SNDs on the quality of life of the sufferers in different countries, but no such studies have been performed on the Yemeni population.

The primary goal of this study is to evaluate the impact of SNDs on QoL by response to self-reported questionnaires using the Arabic version of RSDI as a subjective diagnostic tool and to compare our results with those of similar studies in the international literature.

Patients and Methods

Between January 2014 and June 2017, eighty one patients with different SNDs, (males 45, females 36) were retrospectively interviewed using rhinosinusitis disability index (RSDI) questionnaire, which is a disease specific questionnaire.

The questionnaire was translated into Arabic language by a chosen Arabic language expert, the final version was further checked by a second Arabic language expert. The questionnaire was then distributed to the recruited patients.

The study was carried out at Ibn Sina General Hospital in Mukalla, Hadhramout, Yemen. The ethical approval to carry out this study is not required from the local Institutional Ethical Committee.

Patients included in this study were those who had sinonasal complaint with a clinically confirmed diagnosis; allergic rhinitis, none allergic rhinitis (vasomotor, medicamentosa, occupational, and rhinitis of pregnancy), acute and chronic rhinosinusitis, and others that include nasal bleeding, smell dysfunction, moderate to severe deviated nasal septum.

Patients excluded from the study were those with neoplasms, comorbidities from other organs and those who underwent surgeries.

Rhinosinusitis disability index (RSDI) is a validated and reliable, standard disease specific questionnaire used for the assessment of the impact of rhinosinusitis on the quality of life of patients with SNDs. It contains 30 items related to SNDs that have negative effect on the patients daily activities and limitation of work.

RSDI consists of three domains; functional (11Qs), physical (9Qs) and emotional (10Qs). Each question is scored on a five-points scale (0-1-2-3-4) [4,10] zero score being the normal while the maximum score for the abnormal subject is 150.

Thirty questions were asked and each was scored on a 0 to 4 scale (0=never, 1=almost never, 2=sometimes, 3=almost always, 4=always).

At the end of the questionnaire, the subjects had to rate how severe they felt their sino-nasal problem was? Which is scaled from 1 to 7 (1-3 indicating normal, 4-6 being moderate and 7 being severe).

The completed RSDI was calculated for both the total score and separately for each domain, which are; functional (questions 1-11), physical (questions 12-20) and emotional (questions 21-30) (Appendix 1&2).

Statistical analysis:

We used statistical Package for Social Sciences (SPSS) version 19 (SPSS Inc., Chicago, USA) for analysis, p- value of less than 0.05 was considered to indicate statistical significance while QoL was evaluated using students t-test.

Results

The total number of the patients with sinonasal diseases was 81(range: 18 to 45 years, mean 21.5 ± 5.6 years, males 45 (55.6%) females 36 (44.4%), ratio 5:4).

The return rate of completed questionnaires was 100%. Age distribution and pattern of SNDs are shown in **Table 1**.

Differences in mean scores between males and females in patients with different SNDs were clear in functional, physical, and emotional domains in the RSDI are shown in **Tables 2,3**.

Statistically significant differences were found in questions relating to nasal obstruction, avoidance of travelling, negative outlook on the world, depression, fatigue, irritability, sleep disturbance, smell and taste senses dysfunction in both sexes, P value <0.05 are shown in **Table 4**. Self-rated severity and degree of incapacity from SNDs is shown in **Fig. 1**.

Differences in mean scores between males and females each question in patients with sinonasal diseases using RSDI questionnaire are shown in **Table 4 and Figs. 2 A,B,C**.

Table 1 Demographic characteristics of the patients (no. = 81)

Gender	No. (%)
Male	45 (55.6)
Female	36 (44.4)
Male to female ratio	5:4
Age	
Mean \pm SD	21.5 ± 5.6
Median	21
<20	39 (48.15)
20-40	38 (46.9)
>40	4 (4.9)
Sinonasal diseases	
Allergic rhinitis	20 (24.7)
None Allergic rhinitis	12 (14.8)
Acute rhinosinusitis	6 (7.4)
Chronic rhinosinusitis	24 (29.6)
Others	19 (23.5)

Table 2 Comparison the mean scores and overall of the quality of life in patients with sinonasal diseases according to sex

Sinonasal diseases	Gender M/F No.	RSDI domains						Overall	
		Functional		Physical		Emotional			
		Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Allergic rhinitis	13/7	Mean±SD	0.21	23.8±4.3	0.001	24.2±6	0.161	3.6±1.7	0.023
		26.2±4.9		28.9±5		28.1±11		4.7±1.5	
Non-allergic rhinitis	7/5	28.8±7.7	0.64	22.2±5.3	0.001	25.1±8.9	0.413	36.1±17.6	0.003
		27.4±8.5		28.9±5		28.1±11		4.7±1.5	
Acute rhino sinusitis	2/4	28.8±7.7	0.523	23.8±4.3	0.188	24.3±6	0.174	39.5±16	0.88
		26.2±4.9		26.5±4.1		20.2±6.7		52.2±11.1	
Chronic rhino sinusitis	13/11	27.8±6.9	0.793	26.5±4.1	0.285	20.2±6.7	0.104	52.2±11.1	0.148
		28.8±7.7		28.9±5		28.1±11		4.7±1.5	
Others	9/10	25.4±8.4	0.212	24.6±4.8	0.74	26.8±5.6	0.282	3.9±1.9	0.074
		30±6.9		23.9±4.3		24±5.4		2.2±1.9	

Table 3 Comparison the mean scores and overall of the quality of life in patients with rhinitis vs. rhinosinusitis as two separated groups

Sinonasal diseases	No.	RSDI domains						Overall	
		Functional		Physical		Emotional			
		Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Rhinitis	32	26.9±7.1	0.037	24.7±4.8	0.002	24.6±7.3	0.023	3.5±1.7	<0.001
Rhino sinusitis	30	30.5±6		28.7		29.4±11.2		5.1±1.2	
Overall	62	27.7±7		25.6±5.3		25.7±8.5		3.9±1.8	

Table 4 Differences in mean scores between Males (n=45) and Females (n=36) each question in patients with sinonasal diseases

RSDI domains								
Functional			Physical			Emotional		
Q. No.	Mean ±SD	P-value	Q. No.	Mean ±SD	P-value	Q. No.	Mean ±SD	P-value
F1	M/ 2.2 (1.0)	0.127	P1	M/ 3.2 (1.4)	0.085	E1	M/ 2.5 (1.3)	0.343
	F/ 2.5 (1.2)			F/ 3.7 (1.2)			F/ 2.7 (1.4)	
F2	M/ 2.2 (1.1)	0.065	P2	M/ 3.2 (1.3)	0.660	E2	M/ 2.9 (1.3)	0.163
	F/ 2.6 (1.2)			F/ 3.3 (1.5)			F/ 3.3 (1.3)	
F3	M/ 2.5 (1.3)	0.934	P3	M/ 3.3 (1.3)	0.113	E3	M/ 2.5 (1.3)	0.732
	F/ 2.5 (1.2)			F/ 3.7 (1.4)			F/ 2.4 (1.3)	
F4	M/ 2.0 (1.1)	0.159	P4	M/ 2.1 (1.3)	0.001	E4	M/ 2.5 (1.4)	0.369
	F/ 2.4 (1.6)			F/ 3.0 (1.4)			F/ 2.3 (1.5)	
F5	M/ 3.2 (1.3)	0.037	P5	M/ 2.6 (1.2)	0.101	E5	M/ 2.5 (1.4)	0.099
	F/ 3.7 (1.2)			F/ 3.0 (1.1)			F/ 3.0 (1.3)	
F6	M/ 3.0 (1.4)	0.021	P6	M/ 2.3 (1.6)	.0560	E6	M/ 2.3 (1.5)	0.583
	F/ 3.5 (1.3)			F/ 1.8 (1.2)			F/ 2.1 (1.3)	
F7	M/ 2.7 (1.4)	.0370	P7	M/ 2.1 (1.3)	0.032	E7	M/ 2.6 (1.2)	0.238
	F/ 3.3 (1.3)			F/ 1.5 (1.1)			F/ 2.9 (1.3)	
F8	M/ 2.0 (1.3)	0.025	P7	M/ 2.9 (1.4)	0.835	E8	M/ 2.3 (1.4)	0.013
	F/ 1.4 (1.0)			F/ 2.9 (1.3)			F/ 3.0 (1.5)	
F9	M/ 1.9 (1.1)	0.841	P9	M/ 3.1 (1.3)	0.096	E0	M/ 2.3 (1.3)	0.047
	F/ 1.9 (1.0)			F/ 3.6 (1.4)			F/ 2.9 (1.5)	
F10	M/ 2.1 (1.4)	0.047				E10	M/ 2.4 (1.5)	0.486
	1.6 (1.1)						F/ 2.2 (1.3)	
F11	M/ 3.1 (1.4)	0.120						
	F/ 3.5 (1.1)							

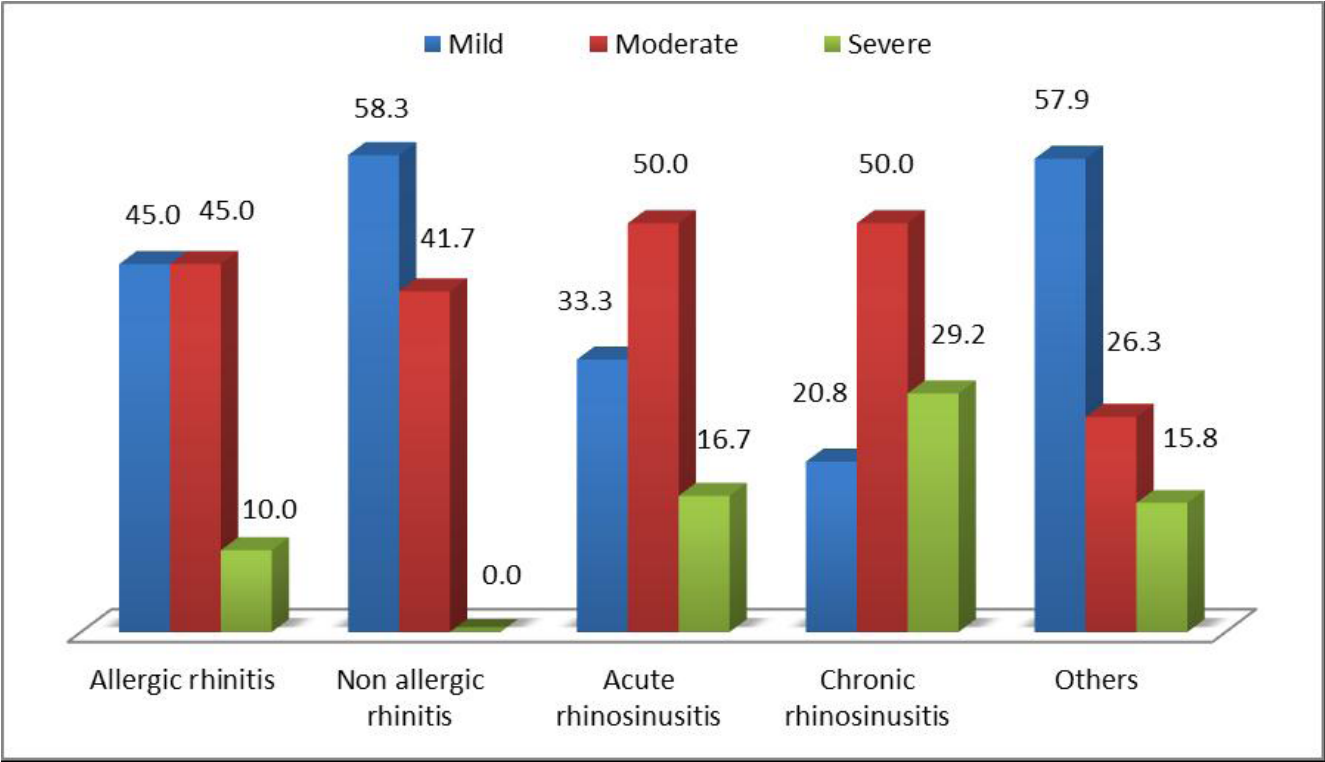


Fig 1 Self rated severity of the sino-nasal diseases

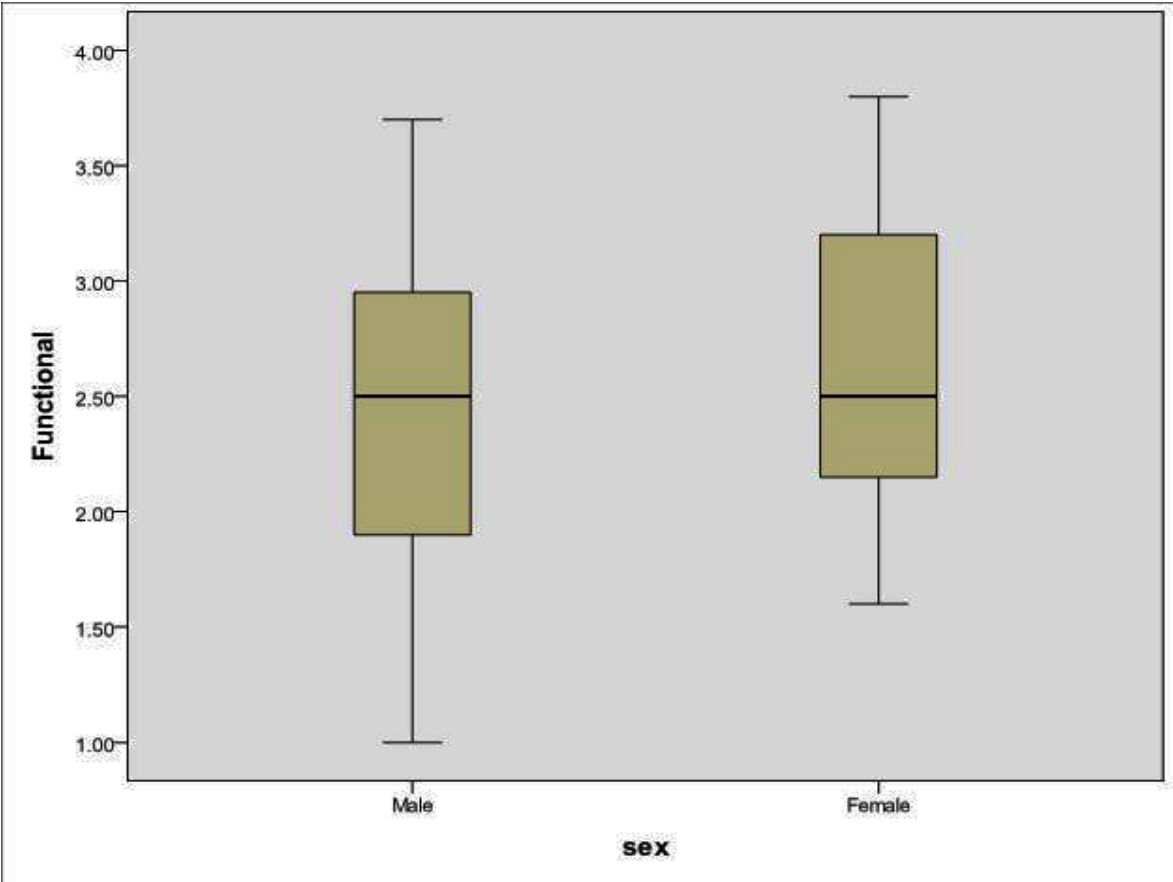


Fig 2a

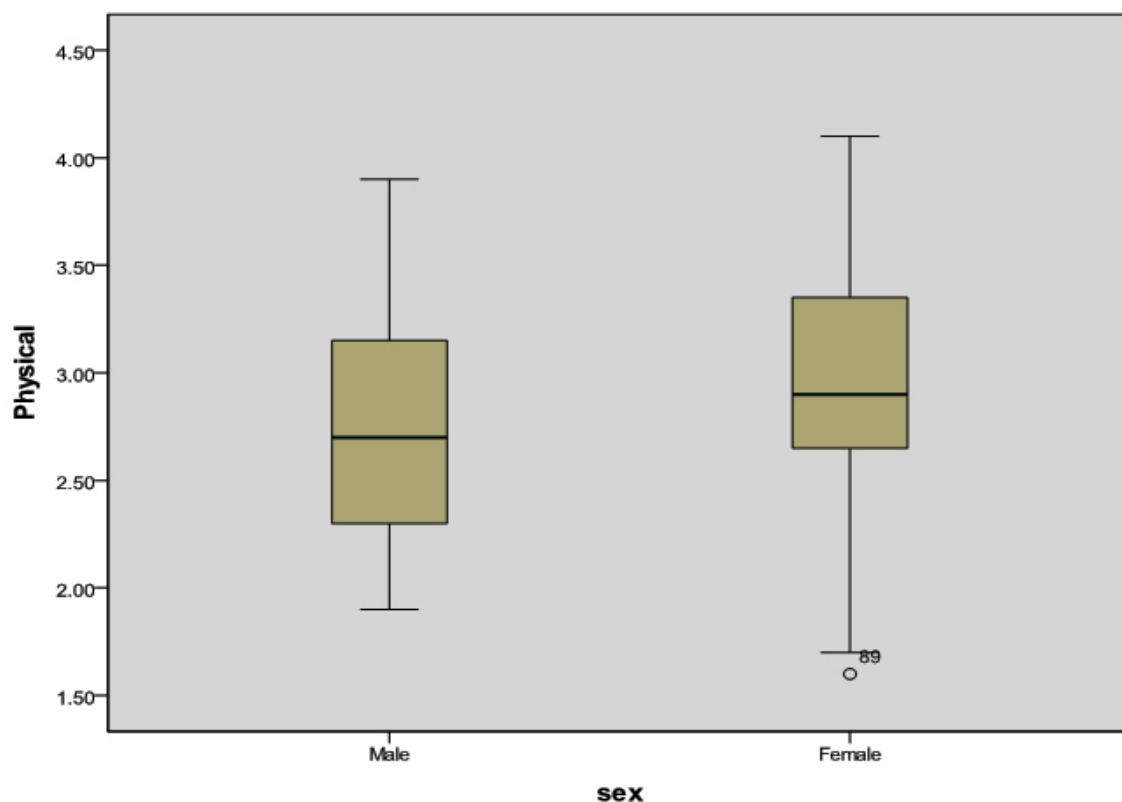


Fig 2b

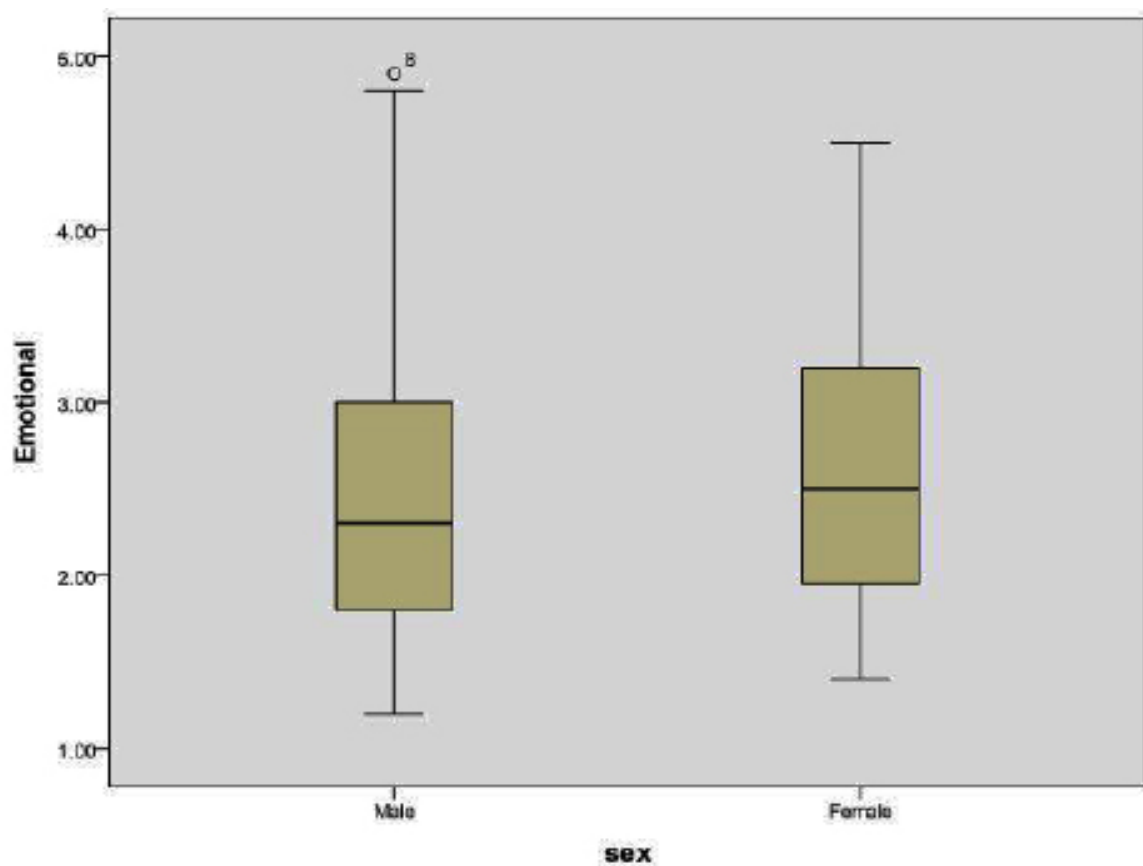


Fig 2c








Fi

Figs 2 A, B, C Boxplots showing the overall scores for A/functional B/ Physical C/ Emotional domains of RSDI among patients with sinonasal diseases according to sex

Appendix 1 Rhino-sinusitis disability index (English version)

Qs No.	Functional domain items (11)	Never	Almost never	Sometimes	Almost always	Always
F1	Because of my problem I feel handicapped					
F2	Because of my problem I feel restricted in performance of my routine daily activities					
F3	Because of my problem I restrict my recreational activities					
F4	Because of my problem I feel frustrated					
F5	Because of my problem I feel fatigued					
F6	Because of my problem I avoid traveling					
F7	I have difficulty with exertion due to my nasal obstruction					
F8	My outlook on the world is affected by my problem					
F9	Because of my problem I find it difficult to focus my attention away from my problem and on other things					
F10	Because of my problem I don't sleep well					
F11	Because of my problem I miss work or social activities					
Physical domain items (9)						
P1	The pain or pressure in my face makes it difficult for me to concentrate					
P2	The pain in my eyes makes it difficult for me to read					
P3	I have difficulty stooping over to lift objects due to face pressure					
P4	My frequent sniffing is irritating to my friends and family					
P5	Straining increases or worsens my problem					
P6	I am inconvenienced by my chronic runny nose					
P7	Food does not taste good because of my change in smell					
P8	Because of my problem I have difficulty with strenuous yard work and housework					
P9	My sexual activity is affected by my problem					
Emotional domain items (10)						
E1	Because of my problem I feel stressed in relationships with friends and family					
E2	Because of my problem I feel confused					
E3	Because of my problem I have difficulty paying attention					
E4	Because of my problem I avoid being around people					
E5	Because of my problem I am frequently angry					
E6	Because of my problem I do not like to socialize					
E7	Because of my problem I frequently feel tense					
E8	Because of my problem I frequently feel irritable					
E9	Because of my problem I am depressed					
E10	My problem places stress on my relationships with members of my family or friends					

Please evaluate the overall severity of your nasal-sinus problem

Normal			Moderate			Severe
1	2	3	4	5	6	7
						

Cited from: 'Benninger MS., Senior, BA. The development of Rhinosinusitis Disability Index. Arch Otolaryngol Head Neck Surg. 1997; 123:1175-1179.

Appendix 2 (Arabic version)

مؤشر الإعاقة من أمراض والتجاويف الأنفية الجانبية (النسخة العربية 2 (Arabic version

رجاء قيم مدى حدة مشاكل أنفك وجيوبك الأنفية

عادي	2	3	متوسط	5	6	حاد
1	2	3	4	5	6	7
○	○	○	○	○	○	○

Discussion

Inflammatory sinonasal diseases represent a broad spectrum of proper pathological units in rhinology with clear symptomatic manifestations that involves the nasal cavity and paranasal sinuses mucosa. They negatively influence the patients QoL and they have different worldwide prevalence. [11]

Based on the results of the current study we found significant differences in the mean scores in the functional domain in RSDI between males and females which were observed in the items fatigue, sleep disturbance, filling of blocked nose, travelling avoidance, and negative outlook on the world. Similarly in the physical domain we found in the items smell and taste; foul smell from the nose, and quantitative and qualitative changes in the smell and taste senses. The last domain items are emotional items which were worse like depression and irritability. These findings suggest that there are significant differences found between genders at all categorized groups of SNDs in all the above mentioned domain items.

Craig et al., 2008 reported that sleep disturbance and fatigue had significant mean scores in patients with CRS compared to allergic rhinitis this finding is similar to our findings. [12]

In a study by Benninger, he reported that patients with CRS have significantly decreased sleep activity scores on the RSDI (Benninger et al., 2010). [13]

While Serrano et al., 2005 reported that patients with nasal polyposis had a higher risk of sleep disturbances than controls. [14] Chester study, 2003 observed increased prevalence of CRS with chronic fatigue and sleep disturbance. [15]

Nasal obstruction (NO) was found to be significantly associated with sleep disturbance in our study.

The symptom of NO is mostly worse at night due to the lower position of the patient's head, and overnight decline of serum cortisol levels as reported by Shalek et al. [16]

There is a clear association between sleep impairment and daily fatigue.

Poorly sleeping patients would be expected to experience fatigue and improved sleep should have a positive influence on fatigue. [17]

Brandsted and Sindwani demonstrated that 25% of consecutively diagnosed CRS patients were also treated for depression, which is significantly higher than in the general population (10–16%) (Brandsted & Sindwani, 2007). [18]

In this study the authors compared the QoL of CRS patients with depression to patients with AR.

The results showed significantly poorer disease-specific and overall QoL scores in depressed CRS patients (both males and females),

Wasan et al., 2007 identified high levels of anxiety and depression in patients who undergo evaluation for CRS using the Rhinosinusitis Symptom Inventory and the Hospital Anxiety and Depression Scale. [19]

The authors recommend routine use of the Arabic version of RSDI for complete and better evaluation of the patient's condition both at the diagnostic level and on follow up so as to assess the impact of SNDs on QoL. This will provide comprehensive approach to the patient and lead to better

patient care and management.

Conclusion

Our study showed that Arabic RSDI version is a valuable and reliable tool for the evaluation of QoL and assessment of the degree of disability in patients with SNDs.

Depression, irritability, fatigue, sleep disturbance, avoidance of travelling, negative outlook on the world, nasal obstruction, smell and taste senses dysfunction are frequently associated with chronic rhinosinusitis and allergic rhinitis and contributes to statistically significant mean differences in both sexes as well as on the self-rated severity of the diseases question. The role of sinonasal diseases on quality of life was statistically significant.

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