

RESEARCH ARTICLE

DEMOGRAPHIC CHARACTERISTICS AND ASSOCIATED DISORDERS OF CATARACT PATIENTS ATTENDED MAKKAH HOSPITAL IN ADEN, YEMENIbtihal Aidroos Zain Gaffer^{1,*} and Reem Alkhader Saleh¹¹ Dept. of Special Surgery, Eye Unit, Faculty of Medicine, University of Aden, Yemen*Corresponding author: Ibtihal Aidroos Zain Gaffer; E-mail: ibtihalzain2018@gmail.com; Mobile: 777357845

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Abstract

The objective is to determine the demographic characteristics, and the proportion of associated factors of cataract. This was a hospital based cross-sectional study among adult patients attending Makkah hospital in Aden. We obtained all demographic and associated factors of cataract. SPSS 17 version was used. All variables were compared according to the sex and age groups. Variables were expressed as the mean \pm standard deviation. Chi-square analysis was used. A P-value of less than 0.05 was considered statistically significant. The study patients were 186 cataract patients, (Females were 51.1% and males were 49.9%). The age of the patients ranged between 25 to 92 years and the mean age was 61.1 \pm 11.1 years. The majority patients (82.8%) were of the age group $>$ 50 years. Most of the patients were from urban 56.5%. About (15.6%) cataract patients were smokers. Most of smokers were males 12.9%. One hundred and eleven (59.7%) of the patients gave history of exposure to sunlight, ($p = 0.000$). Housewives represented (39.2%), ($p = 0.000$). About (14.7%) of the patients were diabetic. Cataract is the commonest cause of visual impairment worldwide and though it affects all age groups. It is more prevalent among people aged 50 years and more. Old age patients from urban and rural areas are the most commonly affected by cataract.

Keywords: Characteristics, Cataract patients, Makkah hospital, Aden.**1. Introduction:**

Cataract is the commonest cause of visual impairment worldwide and though it affects all age groups. It is more prevalent among people aged 50 years or more. According to the World Health Organization (WHO), cataract is the leading cause of blindness all over the world and is responsible for 47.8% of the blindness and accounts for 17.7 million blind people [1]. Cataract is defined as partial or complete opacification of the crystalline lens and is considered the primary cause of vision loss worldwide [2]. It is the leading cause of blindness accounting for nearly 48% of blindness globally [3]. Cataract is the most common avoidable condition if timely intervention is instituted. Otherwise, it results in different catastrophic complications that end up with irreversible blindness [4]. Studies showed that the reasons for delaying the treatment in time are: low economic status, lack of transportation, wrong perception, residual vision and poor knowledge regarding risk factors and nature of disease and treatment options [5]. Various studies across world described its association with different other factors like advancing age, sunlight (UV) exposure, diabetes, hypertension,

obesity, smoking etc., and many of which are modifiable [6, 7].

Al-Akily et al [8] reported that cataract was found to be the main cause of unocular (21.3%) and binocular blindness (46.3%) in Yemen, which is a developing country that need to expand further medical and surgical facilities. This is similar to that found in other studies in developing countries [9, 10], where it contributes to 57.7% of cases of blindness in India and Latin America, and was responsible for 45.2% in the Middle East crescent [11]. This study aimed to determine the demographic characteristics, and the proportion of associated factors of cataract among patients attended Makkah hospital in Aden.

2. Materials and methods:

The present study was a hospital based cross-sectional study carried out between 1st June and 31 July 2022, among adults attending Makkah hospital in Aden governorate. The population of the study were cataract patients. The total sample size was calculated according to the following formula:

Sample size = $n / \{1 - (n / \text{population})\}$

$n = z * z \{p(1-p)\} / D * D$

z = statistical certainty; value 1.96 (confidence of 95%).

p = expected proportion of the characteristic in target population (0.5).

D = error allowable (0.05)

The calculated sample size was 248 patients taking into account 25% non-response rate (62 patients), and therefore, the final sample whom we interviewed were $248 - 62 = 186$ patients.

We interviewed 92 cataract patients during June and 94 during July 2022. We interviewed the patients randomly. Informed verbal consent was obtained from the patients.

During the interview, we obtained all demographic and associated factors of cataract, including age, gender, marital status, residence, occupation, smoking, sunlight, side of cataract, diabetes mellitus, hypertension, eyes trauma, and previous cataract surgery.

Patients were grouped according to age into two age groups: ≤ 50 years, and > 50 years.

SPSS 17 version was used to perform the statistical analysis. All variables were compared according to the sex and age groups and we used descriptive statistics to analyze the data. Variables were expressed as the mean \pm standard deviation (mean \pm SD). Chi-square analysis was used to find the association between categorical variables. A P-value of less than 0.05 was considered statistically significant.

3. Results:

Table 1 and Figure 1 revealed that 186 cataract patients were included in this study. Ninety-five (51.1%) of the patients were females and 91 (49.9%) were males. (Female: male ratio was 1.1:1). The age of the study patients ranged between 25 to 92 years and the mean age was 61.1 ± 11.1 years.

The mean age of male patients was 62.6 ± 10.6 years and the mean age of females was 59.7 ± 11.5 years. There was no statistical significant between the means ($p > 0.05$).

Table 1: Demographic variables of the study patients (no = 186)

Variables	No	%
Sex:		
Females	95	51.1
Males	91	49.9
Female to male ratio:	1.1 : 1	
Age range (years):	25 – 92	
Mean age (all patients):	61.1 ± 11.1	
Mean age (males):	62.6 ± 10.6	
Mean age (females):	59.7 ± 11.5	
p-value	0.079	

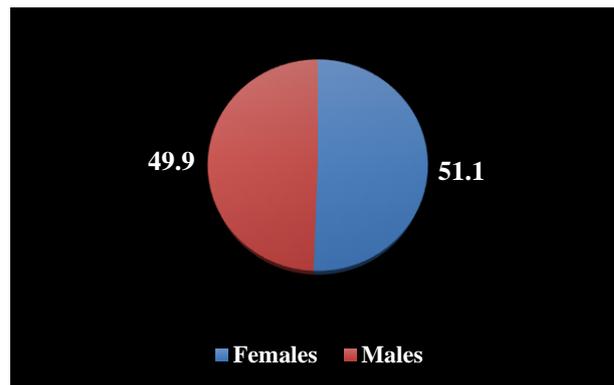


Fig. 1: Proportion of study cataract patients related to sex

Table 2 and Figure 2 showed the distribution of demographic variables related to sex. The majority cataract patients 154 (82.8%) were of the age group more than 50 years old, and the values in both sexes were close to each other. They were 75 (40.3%) females and 79 (42.5%) males, while cataract patients of the age group ≤ 50 years of old represented only 32 (17.2%) and were with females predominant 20 (10.8%). Most of the study cataract patients were from urban areas 105 (56.5%). One hundred seventy four (93.5%) of the cataract patients were married. The difference between values of marital status related to sex was statistically significant ($p = 0.003$). Regarding personal habits, 29 (15.6%) cataract patients were smokers and 157 (84.4%) not smokers. Most of smokers were male cataract patients 24 (12.9%) while females were 5 (2.7%) smokers. This difference was found to be statistically highly significant ($P = 0.000$), Table 2 and Figure 2. One hundred and eleven (59.7%) of the cataract patients gave history of long-time exposure to direct sunlight. The difference between values related to sex showed statistical highly significant ($p = 0.000$), as shown in Table 2 and Figure 2.

Table 2 and Figure 3 illustrated the different types of occupations of the cataract patients. Out of all cataract patients, 73 (39.2%) of them were housewives, 26 (14.0%) got retired from job, 23 (12.4%) had no work, 18 (9.7%) were farmer, 15 (8.1%) were employers, 10 (5.4%) were workers and last occupational groups were 9 (4.8%) daily labourers, 8 (4.3%) soldiers and 4 (2.1%) had their own business. The difference between the occupations related to sex was statistically highly significant ($p=0.000$).

Table 2: Distribution of demographic variables related to sex (n=186)

Variables	Sex				Total		p-value
	Females		Males		No	(%)	
	No	(%)	No	(%)	No	(%)	
Age groups (years):							
≤ 50	20	(10.8)	12	(6.4)	32	(17.2)	0.093
> 50	75	(40.3)	79	(42.5)	154	(82.8)	
Residence:							0.126
Rural	37	(19.9)	44	(23.6)	81	(43.5)	
Urban	58	(31.2)	47	(25.3)	105	(56.5)	
Marital status:							0.003
Married	84	(45.2)	90	(48.4)	174	(93.5)	
Single	11	(5.9)	1	(0.5)	12	(6.5)	
Smoking:							0.000
Yes	5	(2.7)	24	(12.9)	29	(15.6)	
No	90	(48.4)	67	(36.0)	157	(84.4)	
Sun light exposure:							0.000
Yes	43	(23.1)	68	(36.6)	111	(59.7)	
No	52	(28.0)	23	(12.3)	75	(40.3)	
Occupation:							0.000
Housewives	73	(39.2)	0	(0.0)	73	(39.2)	
Retired	6	(3.2)	20	(10.8)	26	(14.0)	
No work	8	(4.3)	15	(8.1)	23	(12.4)	
Farmer	2	(1.1)	16	(8.6)	18	(9.7)	
Employed	5	(2.7)	10	(5.4)	15	(8.1)	
Workers	0	(0.0)	10	(5.4)	10	(5.4)	
Daily laborers	0	(0.0)	9	(4.8)	9	(4.8)	
Soldiers	1	(0.5)	7	(3.8)	8	(4.3)	
Private business	0	(0.0)	4	(2.1)	4	(2.1)	

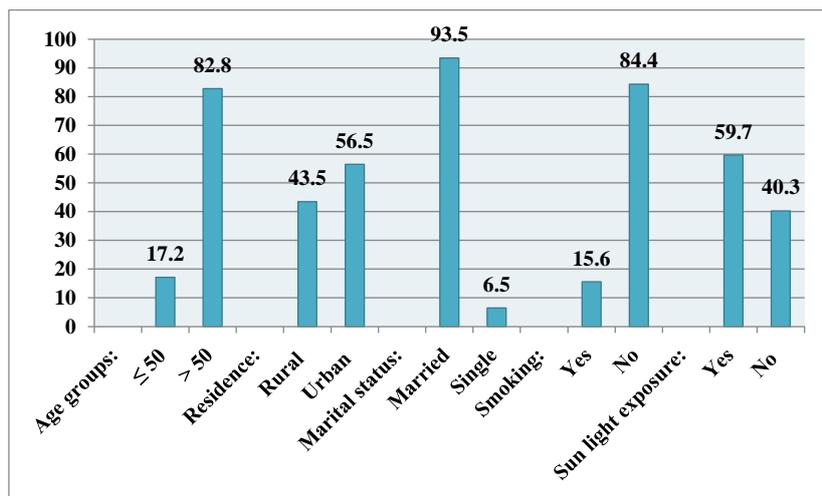


Fig. 2: Proportions of demographic characteristics of the study patients

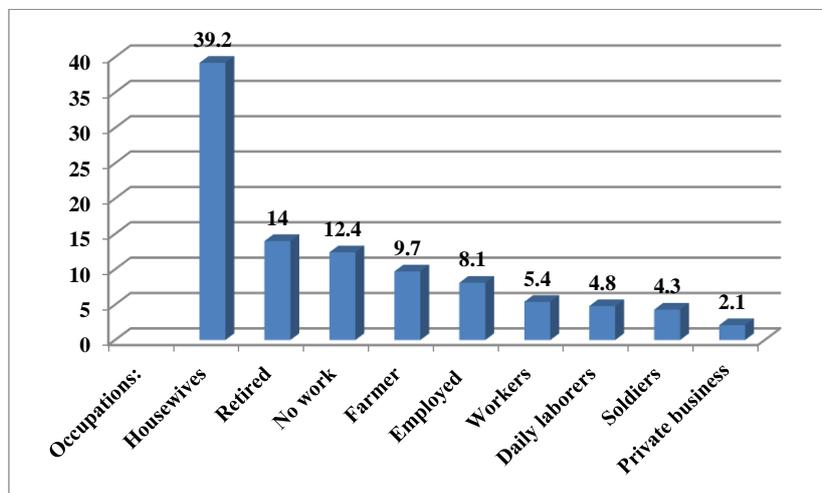


Fig. 3: Occupations of the study cataract patients

Table 3 illustrated the distribution of associated cataract disorders related to sex. Cataract affected the right eyes 94 (50.5%) of the patients followed by the left eyes 85 (45.7%) while bilateral eyes were affected in 7 (3.8%) cataract patients. This difference was found to be not statistically significant ($P > 0.05$).

Twenty-seven (14.7%) of the cataract patients were found to be diabetic while 159 (85.5%) free of diabetes mellitus, ($p > 0.05$). Regarding hypertension, 35 (18.8%) cataract patients were found to be hypertensive.

Thirteen (7.0%) of the cataract patients had eye-trauma distributed to some extent, similar between males and females, ($p > 0.05$). Seventy-eight (41.9%) of the study patients had previous operation, and non-operated cataract patients were 108 (58.1%), the difference between them was not statistically significant ($p > 0.05$), as shown in table 3.

Table 4 illustrated the distribution of sex, age range and age mean related to age groups of cataract patients. The females of the age group > 50 years old were more than females of the age group 50 years and less 75 (40.3%)

while in the age group 50 years and less were 20 (10.8%). Additionally, the male patients in the age group > 50 years represented 79 (42.5%). The mean age of study patients of the age group 50 years and less was 43.9 ± 7.5 years and of the age group more than 50 years was 64.7 ± 7.9 years ($p = 0.000$).

Table 5 reveals the distribution of associated cataract disorders related to age groups. Cataract of the right eyes were found in 51 (27.4%) patients aged 50 years or less and 43 (23.1%) among cataract patients aged more than 50 years. Of the left eyes were found cataract in 37 (19.9%) patients aged 50 years or less and 48 (25.8%) cataract among patients aged more than 50 years. Bilateral cataracts were found 4 (2.2%) in patients aged 50 years and less and 3 (1.6%) in patients aged more than 50 years old. This difference was found statistically not significant ($P > 0.05$). Presence of hypertension were found predominant 25 (13.4%) among cataract patients aged more than 50 years, and only in 10 (5.4%) cataract patients aged 50 years and less. The difference, was found to be statistically significant ($P = 0.005$), as shown in table 5.

Table 3: Distribution of associated cataract disorders related to sex (n=186)

Variables	Sex				Total		p-value
	Females		Males		No	(%)	
	No	(%)	No	(%)			
Cataract side:							
Left	39	(21.0)	46	(24.7)	85	(45.7)	0.290
Right	51	(27.4)	43	(23.1)	94	(50.5)	
Bilateral	5	(2.7)	2	(1.1)	7	(3.8)	
Presence of DM*:							
Yes	10	(5.4)	17	(9.1)	27	(14.5)	0.085
No	85	(45.7)	74	(39.8)	159	(85.5)	
Presence of Hypertension:							
Yes	19	(10.2)	16	(8.6)	35	(18.8)	0.408
No	76	(40.9)	75	(40.3)	151	(81.2)	
Eye trauma:							
Yes	6	(3.2)	7	(3.8)	13	(7.0)	0.467
No	89	(47.9)	84	(45.1)	173	(93.0)	
Cataract operation:							
Yes	38	(20.4)	40	(21.5)	78	(41.9)	0.345
No	57	(30.7)	51	(27.4)	108	(58.1)	

DM* = Diabetes mellitus

Table 4: Distribution of sex, age range and age mean related to age groups of cataract patients (n=186)

Variables	Age groups (years)				Total		p-value
	≤ 50		> 50		No	(%)	
	No	(%)	No	(%)			
Sex:							
Females	20	(10.8)	75	(40.3)	95	(51.1)	0.093
Males	12	(6.4)	79	(42.5)	91	(48.9)	
Total	32	(17.2)	154	(82.8)	186	(100)	
Age range (years):	25 – 50		52 – 92		25 - 92		0.000
Mean age:	43.9 ± 7.5		64.7 ± 7.9		61.1 ± 11.1		

Table 5: Distribution of associated cataract disorders related to age groups (n=186)

Variables	Age groups (years)				Total		p-value
	≤ 50		> 50		No	(%)	
	No	(%)	No	(%)	No	(%)	
Cataract side:							
Right	51	(27.4)	43	(23.1)	94	(50.5)	0.313
Left	37	(19.9)	48	(25.8)	85	(45.7)	
Bilateral	4	(2.2)	3	(1.6)	7	(3.8)	
Presence of DM*:							
Yes	14	(7.5)	13	(7.0)	27	(14.5)	0.476
No	78	(41.9)	81	(43.5)	159	(85.5)	
Presence of Hypertension:							
Yes	10	(5.4)	25	(13.4)	35	(18.8)	0.005
No	82	(44.1)	69	(37.1)	151	(81.2)	
Eye trauma:							
Yes	9	(4.8)	4	(2.2)	13	(7.0)	0.117
No	83	(44.6)	90	(48.4)	173	(93.0)	
Cataract operation:							
Yes	37	(19.9)	41	(22.0)	78	(41.9)	0.374
No	55	(29.6)	53	(28.5)	108	(58.1)	

DM* = Diabetes mellitus

4. Discussion:

Cataract is one of the major conditions chosen by the global initiative, Vision 2020—The Right to Sight, due to the magnitude of its contribution to the burden of blindness [12]. Several studies have reported on the burden of visual loss from cataracts and have demonstrated that the prevalence of cataracts increases with increasing age [13].

Cataract continues to be a major cause of blindness worldwide (48%), affecting almost 18 million people [14]. The prevalence of cataract blindness is increasing in many developing countries largely due to lack of a dedicated cataract surgery programs, inadequate human resources and poor management, a lack of basic infrastructure, poor disease awareness, and poverty [15].

There were several risk factors being attributed to age-related cataract, which include older age, female gender, smoking, and diabetes. Other risk factors include ultraviolet light, dehydration, and antioxidant deficiencies [16].

In the present study, 186 cataract patients attending Makkah hospital and were enrolled in our study. Ninety-five (51.1%) of the patients were females and 91 (49.9%) were males. (Female: male ratio was 1.1:1).

Kyari et al [17] from Nigeria reported in their study that a slight preponderance of females over males. Their study included 275 females and 212 males (F:M, 1.3:1). They explained this variation due to the reason that women have longer life expectancy than men and prevalence of blindness is associated with increasing age and being female in this part of the country.

Das et al [18] reported in their study that among the cataract study patients, (55.5%) were females, while males were 44.5% (ratio female to male 1.3:1).

Lundqvist et al [19] found in their population-based

study of cataract surgery outcome, the female to male ratio was found to be 2:1.

A hospital-based studies conducted in Auckland, New Zealand, and Nepal reported female predominance in uptake of cataract surgery [20, 21].

In the current study, we found that the age of the study cataract patients ranged between 25 to 92 years and the mean age was 61.1 ±11.1 years.

The mean age of males was 62.6 ± 10.6 years and the mean age of females was 59.7±11.5 years. There was no statistical significant between the means ($p > 0.05$). However, our findings were to some extent, comparable with two studies conducted in Ethiopia, first study [6] reported that the mean age of their study cataract patients was 64.16 ± 8.83 years (range, 50–90 years), and the second study [22] reported that the mean age of their study cataract patients was 64.2 ± 14.6 years. Other study conducted in Bangladesh [23] reported that, the mean age of their study subject was 58.8 ± 6.055 years.

In the present study, the majority of cataract patients (82.8%) were of the age group more than 50 years old, and the values in both sexes were close to each other. They were (40.3%) females and (42.5%) males, while cataract patients of the age group ≤ 50 years of old represented only (17.2%) and were with females predominant (10.8%).

Kurawa et al [24] found in their published study that the age range was 40 to 99 years with a mean age of 62.76 ± 10.49 years (61.35 ± 9.75 years in men and 63.85±10.9 years in females). The close association of cataract with increasing age has been well documented by other studies in India [25, 26, 27].

This is due to with increasing age, the amount of proteolytic enzymes are reduced, thus promoting the formation of protein aggregates which leads to cataract and loss of visual acuity [28].

Kurawa et al [24] found that most of the patients (92.6%) were aged 50 years and above.

In our study, we found that the most of the study cataract patients were from urban areas (56.5%). Das et al [18] reported that proportion of cataract among participants from urban and rural areas were 38% and 35.4% respectively, which was not significant ($P > 0.05$).

We found in our present study (15.6%) cataract-patients were smokers and most of smokers were males (12.9%) while females were (2.7%) smokers. This difference was found to be statistically highly significant ($P = 0.000$).

Smoking has been linked to cataract risk and is one reason eyecare practitioners have been more diligent to discuss smoking cessation with patients. One study reported that anyone with a history of smoking cigarettes was associated with an increased risk of age-related cataract. Current smokers had a higher risk of incidence. They found that former and current smokers were associated with nuclear and sub-scaphular cataracts. Recently, another study found a significant dose-response relationship between smoking and the need for cataract extraction. Conversely, smoking cessation was associated with a decrease in risk that accumulated over time [29].

In the present study, we found (59.7%) of the cataract patients gave history of long-time exposure to direct sunlight. The difference between values related to sex showed statistical highly significant ($p = 0.000$).

Almony et al [30] reported that, there was a strong positive combination between increasing hours of sunlight exposure and cataract.

In the current study we observed that (39.2%) of the cataract-patients were housewives, (14.0%) got retired from job, (12.4%) had no work, (9.7%) were farmer, (8.1%) were employers, (5.4%) were workers and last occupational groups were (4.8%) daily labourers, (4.3%) soldiers and (2.1%) had their own business. The difference between the occupations related to sex was statistically highly significant ($p=0.000$).

In a study conducted in India [18] found that 32.7% of the study subjects were housewives, 20% were daily labourer, 18.8% got retired from job, 16% were office goer, 5.2% had their own business and the rest were students.

In the present study, (14.7%) of the cataract-patients were found to be diabetic while (85.5%) free of diabetes mellitus, ($p > 0.05$). Regarding hypertension, we found (18.8%) cataract patients were hypertensive.

Studies from different settings also reported diabetes and hypertension as risk factor for cataract. Ugadhe et al [31] in their study reported a significant association of diabetes and hypertension with cataract. Mamatha et al [32] also reported a significant association between

cataract and diabetes, Nirmalan et al [33] in their study reported hypertension as a risk factor for cortical cataract, whereas diabetes was reported as a risk factor for posterior sub-capsular cataract.

5. Conclusion:

Cataract is the commonest cause of visual impairment worldwide and though it affects all age groups. It is more prevalent among people aged 50 years and more. Old age patients from urban and rural areas are the most commonly affected by cataract. Further studies are need to determine the magnitude of this health disorders.

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مقالة بحثية

الخصائص الديموغرافية والاضطرابات المصاحبة لمرضى الساد تمت معاينتهم في مستشفى مكة في عدن، اليمن

إبتهاال عيدروس زين جعفر^{1*} و ريم الخضر صالح¹

قسم الجراحة الخاصة، وحدة العيون، كلية الطب، جامعة عدن، اليمن

* الباحث الممثل: إبتهاال عيدروس زين جعفر؛ البريد الإلكتروني: ibtihalzain2018@gmail.com؛ جوال: 777357845

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المُلخَص

كان الهدف من الدراسة هو تحديد الخصائص الديموغرافية، ونسبة العوامل المصاحبة لمرض الساد. وكانت الدراسة دراسة مقطعية مستعرضة أجريت بين مرضى الساد البالغين الذين تمت معاينتهم في مستشفى مكة في عدن. استخلصنا على جميع العوامل الديموغرافية والمرتبطة بمرض الساد. تم استخدام SPSS 17. كما تمت مقارنة جميع المتغيرات حسب الجنس والفئات العمرية. واعتبرت المصطلحات عن المتغيرات على أنها المتوسط \pm الانحراف المعياري. تم استخدام تحليل Chi-Square. وكذلك اعتبار قيمة P أقل من 0.05 ذات دلالة إحصائية. بلغ عدد مرضى الدراسة 186 مريضاً مصابون بمرض الساد. (نسبة الإناث 51.1% والذكور 49.9%). تراوحت أعمار المرضى ما بين 25 إلى 92 سنة ومتوسط العمر 61.1 ± 11.1 سنة. غالبية مرضى الساد (82.8%) كانوا من الفئة العمرية فوق 50 سنة. كان معظم مرضى الساد الذين شملتهم الدراسة من المناطق الحضرية بنسبة 56.5%. أما بالنسبة للعادات الشخصية، فإن 15.6% من مرضى الساد كانوا مدخنين. وكان معظم المدخنين من الذكور 12.9%. (الفرق بين الجنسين ذو دلالة إحصائية $p=0.000$). أجاب 59.7% من المرضى بأنهم تعرضوا لأشعة الشمس المباشرة. ($p=0.000$) من بين جميع مرضى الدراسة، 39.2% كن ربوات بيوت ($p=0.000$) كما وجد أن 14.7% من مرضى الساد مصابون بالسكري. مرض الساد هو السبب الأكثر شيوعاً لضعف البصر في جميع أنحاء العالم وعلى الرغم من أنه يؤثر على جميع الفئات العمرية. وهو أكثر انتشاراً بين الأشخاص الذين تتراوح أعمارهم بين 50 عاماً وأكثر. المرضى المسنون من المناطق الحضرية والريفية هم الأكثر تضرراً من مرض الساد.

الكلمات المفتاحية: الخصائص، الاضطرابات المصاحبة، مرضى الساد، مستشفى مكة، عدن.

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