

Prevalence of red- green colour blindness in Nineveh governorate

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ABSTRACT

Objective: To study the prevalence of red-green colour blindness among students; staff members and others working in Mosul college of medicine.

Method: This cross sectional study was performed in Mosul college of medicine during the period from March 2007-March 2008. One thousand fifty five (1055) persons of both sexes were interviewed to Ishihara colour test which is the most often used to diagnose Red-Green colour blindness. The participants were college students , staff members and clercks of college .

Results: Fifty four showed (5.1%) men and 0.37% women had red-green colour blindness. It was seen that 176 persons from the total sample (1055) had refractive error; only one person (0.56%) out of these 176 showed Red-Green colour blindness.

Conclusion: The present study showed that colour blindness is a not uncommon problem among people and with the advance of modern life it is getting a source of difficulties and despair with distinguishing colours, example traffic lights , work on computer , ... ect. Our ambition is to carry out more detailed studies for which the present study may open the door for more collaborative studies with other departments specially psychological in order to lessen such problem facing coulor blind people.

الخلاصة:

عمى الألوان: هو الحالة غير الطبيعية التي تمتاز بعدم القدرة على التفريق بين ألوان الطيف.
الهدف: إيجاد النسبة المئوية لمدى انتشار هذا المرض لدى الأشخاص من كلا الجنسين وبالأخص للنوع الأحمر-الأخضر والذي هو الأكثر شيوعاً في العالم حيث لا يوجد أي رقم إحصائي أو دراسة بحثية لهذا الموضوع في العراق وأغلبية الدول العربية .

التصميم: دراسة مسحية لمرضى عمى الألوان (الأحمر-الأخضر) باستخدام دراسة المقطع العرضي.

المكان: كلية طب الموصل – شعبة أمراض العيون
المشاركون: أجريت هذه الدراسة على (1055) شخص من غالبية الطلبة وقسم من أعضاء الهيئة التدريسية والبعض من موظفي الكلية ومن كلا الجنسين .

لقد خضع كل من المشاركين أعلاه لفحص (Ishihara) إظهارا الخاص بتشخيص عمى الألوان الأحمر-الأخضر
النتائج: أظهرت الدراسة هذه بان النسبة المئوية لانتشار هذا المرض كانت 5.1% عند الذكور و 0.37% عند الإناث .
الاستنتاج: يستدل من نتائج الدراسة هذه بان الأرقام تتماشى مع الأرقام المسجلة في الدراسات والبحوث المنشورة عالمياً، هذا في الوقت الذي نطمح بدراسات أكثر وأدق لأهمية الموضوع وما قد يتسبب عنه من صعوبات وإرباك مثلاً عند التعامل مع علامات الضوء المرورية للسير واستخدام الكمبيوتر .. الخ . لذا يجب التعرف عن هذا المرض بكافة وسائل الإعلام والندوات ولذات كل شخص درءاً لما قد يتسبب من صعوبات وإرباك للمصابين بهذا المرض بالرغم من قلة نسبة شيوعه عالمياً .

Colour blindness in an abnormal condition characterized by inability to clearly distinguish different colours of the spectrum^(1,2). The retina contains three types of cones; each responsible for detecting either red, green or blue on day light^(7,8).

The difficulties range from mild to severe. The English chemist John Dalton in 1798 published the first scientific paper on the subject⁽³⁾.

Colour blindness can be classified into hereditary (congenital) and acquired. The most common form is due to inherited condition transmitted as sex linked disorder. ^(4,5,6). Males have only one (X) chromosome (XY) and females have two (XX) chromosomes; for that reason men are much more affected than women⁽⁵⁾.

Red-Green type (deuteranopia) is the most common hereditary (genetic) photoreceptor disorder with which this study is dealing. The main difficulty is to distinguish red and green colours; the second form is the difficulty to distinguish blue and yellow colours (protanopia)⁽¹⁰⁾ which is very rare. The third and last is the total inability to distinguish any colour (acromatopsia)⁽¹⁰⁾ which is exceedingly rare and occurs due to cone cells defect or absence in the retina.

European -studies vary in their figures of prevalence with different cultures. Researchers studying red-green colour blindness reported an average prevalence of 4,7% in U.K; 1% in Eskimo males; 2.9% of boys from Saudi Arabia; 5.7% from India.... etc; shortage of figures from other races⁽¹²⁾.

Generally there is no treatment to cure colour blindness. However certain types of tinted filters and contact lenses may help an individual to distinguish different colours better⁽¹³⁾.

Aim of study

As no available researches about colour blindness in Iraq nor in most other Arabian area,

so it is worthwhile trying to find its prevalence in Ninavah Governorate.

Subjects and methods

One thousand fifty five persons (1055) were interviewed to Ishihara colour test which is the most often used test to diagnose red-green colour deficiencies. The .study sample is from either sex and of different age groups. Five hundred seventy five (575) were males and four hundred eighty (480) were females. The data collected from students, staff members and others working at Mosul medical college .

Every person had been interviewed to Ishihara test which consists of one or more figures embedded in the picture as number of spots in slightly different colours which can be seen with normal colour vision people but not with colour defect people . The full set of the test has a variety figure/background colour combination which enable the diagnosis of visual defect if present . The diagnosis was ascertained, the results were presented in suitable tables and percentages were calculated for each group.

Results:

The study showed that 75.17% of the sample were of 19-34 years of age , 15.07% were 35-50 years of age and 9.76% were above 50 years of age , see table (1).

The prevalence of red-green colour blindness in our study was 5.1% in men and 0.37% in women as it is noted in table (2).

From the total sample (1055) in the study 176 (0.56%) persons were having refractive error (wearing eye glasses) of which only one person out of these 176 showed red-green colour blindness.

The percent (%) of the colour defect in third age group (above 50 yrs) was higher than in other age groups (table 3).

Table (1) : represents the whole sample with their age groups and sex

	Male	%	Female	%	Total	%
19-34 years	402	69.9	391	81.4	793	75.17
35-50 years	90	15.8	69	14.3	159	15.07
Above 50 years	83	14.3	20	4.3	103	9.76
Total	575	100	480	100	1055	100

Table (2) : compares normal people with colour blindness people

Normals		Males Colour		Normals		Females Colour		Total	
Males	%	blind	%	Females	%	blind	%		%
521	49.37	54	5.11	476	45.15	4	0.37	1055	100

Table (3) : represents colour blindness number and % in each age group

Age groups	Colour blindness No.	%
19-34 years	15	1.4
35-50 years	18	1.7
Above 50 years	25	2.3

Table (4) : incidence of colour blindness among people having refractive error .

People having refractive error	No. of colour blindness among people having refractive error	%
176	1	0.56

Discussion:

Colour blindness is a universal phenomenon but with the advances of modern life it is getting a source of despair as colour blind person may have difficulties with distinguishing traffic lights⁽¹⁴⁾, try to work on the computer, observing chemical reactions and even may not be able to perform certain jobs (example: pilots) ... etc.

In this study, table(2) shows that the prevalence of red-green colour blindness was 5.1% in men and 0.37% in women which is consistent with the resultant figures of other different cultures reported initially in this study.

On the other hand, table (4) shows that only one individual from the 176 persons having refractive error was colour blind (0.56%), so one can say that probably there is no statistically significant relation between colour blindness and refractive error.

Furthermore; Table (3) revealed that the percentage of colour blindness in age group (above 50 years) is slightly higher than the percent in the other age groups. Such observation may be due to presence of missed optic nerve or macular disease in this age group which reflects the need for further

study and detailed examination to exclude undiagnosed optic nerve and / or macular disease.

Conclusion: It is important for this disease to be well known to the public and the affected individuals through scientific meetings; multi media ... etc. Our ambition is to carry out more and better community based surveys which the present study may pave the way for more elaborate studies and collaboration with different departments especially public health and psychological department in order to lessen the difficulties and problems that may face colour blind individuals.

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