

Risk factors of Blindness in Sudan-2019

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Abstract

Background: Blindness is a visual acuity of less than 3/60 or a corresponding visual field loss to less than 10 degrees in the better eye with the best possible correction. It has significant negative impacts on the community; including physical limitations, psychological effects and financial burden. The objective of this research was to study the associated risk factors of blindness in Sudan.

Materials& Methods: This was an outreach based cross- sectional study conducted among 858 participants on four different cities in Sudan; Khartoum, Kassala, Nyala and Aldamazin in 2019. The questionnaire was composed of 43 close-ended questions on socio-demographic data and risk factors of blindness. Cluster sampling was used to draw the sample proportional to size at each camp and then systemic random sampling was used to select participants. Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 21.0.0. This study was estimated at 95% confidence level.

Results: 78% of blinds were illiterate. 17% has family history of blindness with significant association among the first degree relatives (P-value=0.003). Smoking was an associated risk factor in term of frequency of tobacco consumption (P-value=0.041) and obesity was inversely associated factor (64%) of Body Mass Index less than 30.

Conclusion: Illiteracy, first degree family history of blindness and frequency of smoking were associated risk factors of blindness while obesity was inversely associated with it.

Keywords - Blindness; Risk Factors; Family History; Health Illiteracy; Obesity.

I. INTRODUCTION

Blindness is a visual acuity of <3/60 or a corresponding visual field of less than 20 degrees in diameter, in the better eye. It interferes with a person's ability to perform everyday activities^[1].

Globally, it is estimated that approximately 1.3 billion people live with some form of vision impairment. 36 million people of them are blind. Approximately 80% of all vision impairment globally is considered avoidable and the majority of people with vision impairment are over the age of 50 years^[2].

Aging is one of the major risks of blindness and visual impairment since most of the blinding diseases are related to age. Some people at certain regions of the globe are at higher risk to develop blindness due to their higher probability to develop diseases leading to blindness such as

African-Americans and Hispanics are at higher risk for blindness and vision impairment than Caucasians because they are at higher risk for developing diabetes, diabetic retinopathy, and glaucoma. Caucasians are at higher risk for macular degeneration than other ethnic groups. Females and low-income families are more affected by blindness and vision impairment than males. Women make up 65 percent of age related macular degeneration (AMD) cases; 61 percent of glaucoma and cataract patients are women, and 66 percent of blind patients are women^[3].

Blindness has significant negative impacts on the community; including physical limitations, psychological effects and financial burden on the community and the countries with high prevalence. The direct and indirect costs of blindness were estimated in 2013 by more than 139 billion dollars^[4].

The World Health Organization (WHO) work is guided by the Universal eye health: a global action plan 2014-2019, approved by the World Health Assembly in 2013, with the aim of achieving a measurable reduction of 25% of avoidable visual impairments by 2019.

1.1. Objectives:

To study the associated risk factors with blindness in Sudan.

II. MATERIALS & METHODS

The study was reviewed and approved by Albasar Institutional Review Board- Sudan.

It was an outreach based cross- sectional study conducted among 858 participants on four different cities in Sudan; Khartoum, Kassala, Nyala and Aldamazin in the

period between August 2018 and March 2019. Cluster sampling was used to draw the sample proportionate to size at each camp and then systematic random sampling was used to select participants. After obtaining an informed written consent, each participant was examined clinically by consultant ophthalmologist and then a pre-coded, pretested, administered questionnaire was used to collect data from study participants. Data were analyzed using SPSS version 21.0.0. Univariate analysis for all determinants, bivariate analysis by cross tabulation of risk factors and multiple linear regression analysis of variables were performed. The study was estimated at 95% confidence level.

All methods were performed in accordance with the relevant guidelines and regulations.

III. RESULTS

Table 1: Background characteristics:

Background characteristic		Frequency	Percentage
Age in years	18-29	189	22%
	30-39	87	10%
	40-49	159	19%
	50-59	153	18%
	60-69	135	16%
	70-79	87	10%
	80 & above	48	6%
	Total	858	100 %
Gender	Male	463	54%
	Female	395	46%
	Total	858	100 %
Living are	Urban	600	70%
	Rural	258	30%
	Total	858	100 %
Marital Status	Single	192	22%
	Married	553	64%
	Divorced	48	6%
	Separated	36	4%
	Widowed	29	3%
	Total	858	100 %

Table 2: Educational level of blind candidates

Educational level		Current status of blindness		Total
		Blind	Not blind	
	Illiterate	92	196	288
	Basic	13	156	169
	Secondary	6	153	159
	University and higher	7	235	242
Total		118	740	858

P-Value = 0.000

Table 3: Degree of relationship of the family member with blindness

Degree of relationship of the family member with blindness		Current status of blindness		Total
		Blind	Not blind	
	First degree relative	20	27	47
	Second degree relative	6	38	44
	Third degree relative	0	5	5
Total		26	70	96

P-Value = 0.003

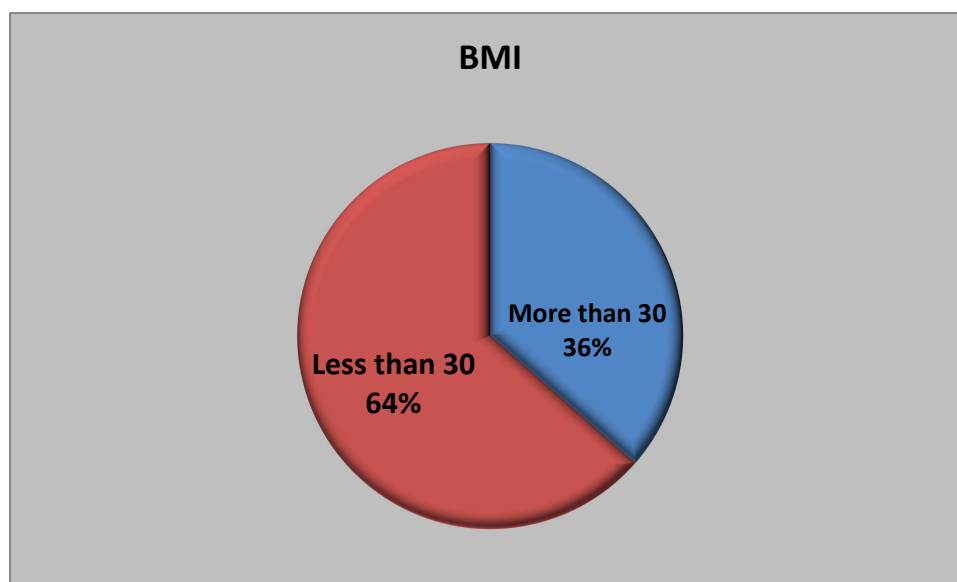


Figure I: Body Mass Index among blind candidates

Table 4: Coefficients analysis of tobacco consumption, type of tobacco, duration of consumption and frequency of consumption

	Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.945	.420		4.627	.000
	Tobacco consumption	.133	.380	.033	.352	.726
	Type of tobacco product consumed	.038	.045	.083	.844	.400
	Frequency of tobacco consumption per day	-.096	.046	-.211	-2.066	.041
	Duration of tobacco consumption	-.001	.041	-.002	-.017	.987

P-value= 0.041

- Dependent Variable: Current status of blindness
- Predictors, (Constant): Tobacco consumption, type of tobacco, duration of consumption and frequency of consumption

IV. DISCUSSION

The study was conducted to identify the associated risk factors of blindness in Sudan.

Over the 858 candidates studied in this research, BMI was inversely associated with blindness unlike the anticipation as the majority of the blind candidates were of BMI less than 30. Merely, it does not mean that obesity protects against blindness; other studies documented significant relations of obesity with visual impairments^[5]. While impact of obesity on overall health is well documented, less is known about the ocular manifestations of obesity. Studies to date have not found a consistent pattern of association and the present literature is inadequate to establish any convincing associations^[6]. This fact makes it logical that the risk factors of blindness in Sudan were not directly related to obesity but to other factors; low educational profile; there was strong association between blindness and the level of education (P-value= 0.000) , the illiterate blind persons represented the highest percentage and the blind participants with university level and higher were the lowest. Most of the blinding diseases depend to a considerable level on health awareness through early detection of symptoms and when to seek medical advice, in addition to preventive measures and adherence to follow-up, all of which require a good level of knowledge and educational level that would significantly contribute to better outcomes. The results are coincident with the study of Health literacy of common ocular diseases in Nepal; they found awareness of common ocular diseases was associated with the level of education^[7].

The study detected a major group among the blind members of the study with family history of blindness, the association was significant with those where the family member affected is of first degree relation (P-value= 0.003). Blindness is caused by underlying diseases; most of them are genetically related; Mahavir Singh and et al reported some blinding hereditary ocular diseases with association of selective genes^[8] and that plays a major role in making family history especially at the first degree level a significant associated factor. It is believed that the percentage of candidates with family history of blindness in this study was underestimated; the family history could either be stated as present or unknown but usually difficult to state not present. Some participants may have family history of blindness unknown for them; therefore unintentionally mislead the true number of blinds with family history.

All forms of tobacco consumption were studied for probability of been an associated risk of blindness, no any type of relation was detected among smoking, snuffing or both together neither in practicing this habit nor the duration of practicing them; unlike the study conducted by Donald U^[9] who stated that there was a strong association between tobacco smoking and blinding diseases. But a significant difference was there regarding the frequency of tobacco consumption; as much as the frequency of consumption is higher as long as the risk is there of becoming blind, P-value= 0.041 in a multi-linear regression test between blindness with tobacco consumption, frequency, type of tobacco and duration.

V. CONCLUSION

Low educational levels, family history of blindness and tobacco consumption in high frequency were associated risk factors of blindness.

Prevention of modifiable factors and control of the non modifiable may significantly contribute in reduction of blindness prevalence and improve the life quality of individuals and community.

LIST OF ABBREVIATION

AMD: Age related macular denegation

SPSS: Statistical package for the social sciences

WHO: World health organization

BMI: Body mass index

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