

Prevalence of night blindness in Bashagard district in Hormozgan, Iran, in 2011

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Abstract

Background: Night blindness is a visual disorder associated with unusual vision during the night or in darkness. Vitamin A deficiency (VAD), which is easily preventable, is the main known etiology of night blindness. Malnutrition is a common health issue in Bashagard and some other areas in the Hormozgan province of Iran. The aim of the current study was to determine the prevalence of night blindness in Bashagard.

Methods: This descriptive cross-sectional study was done on 814 Bashagard residences. Data was analyzed using SPSS software and descriptive studies.

Results: About 60% of the study participants were uneducated people or people with low education. Thirty-two out of 814 people that were studied had problems with night vision. Therefore, the prevalence of night blindness in Bashagard was 3.93%.

Conclusion: Prevalence of night blindness in Bashagard is three times higher than its prevalence in all of Iran. Therefore, preventive interventions such as dietary regimes with vitamin A enrichments or supplementations are recommended.

Key Words: night blindness, vitamin A deficiency, malnutrition

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1. Introduction

Night blindness is a visual disorder associated with visual disturbance during the night or in darkness. In addition, patients with night blindness need more time for accommodation when the lucency of an environment is decreased. Night blindness is also associated with decreased distinction and contrast abilities. Night blindness occurs in response to a decrease in rhodopsin in retinal light-sensitive rod cells. Night blindness is usually due to retinitis pigmentosa, which is an inherited disorder (1). Rhodopsin also decreases in response to vitamin A deficiency (VAD) (2).

According to a World Health Organization (WHO) report, the prevalence of night blindness in Iran is moderate (more than 1% and less than 5% in pre-school age children). But this prevalence is highly variable in different areas of Iran because of different nutritional situations (3). It is well known that VAD is associated with a higher prevalence of night blindness and eye disorders (4). Xerophthalmia is advanced form of vitamin A deficiency that is associated with dry and unclear conjunctiva (5, 6). Photosensitivity, decreased tearing, ulcers, and infection are also more prevalent in these patients. Compared to other parts of country, VAD is more prevalent in Hormozgan province. Studies in Iran have shown a high prevalence of VAD among pregnant women in Hormozgan, which is an

important health issue in this province (7). The prevalence of night blindness is classically an indicator of nutritional and vitamin A deficiency situations. The aim of the current study is to assess the prevalence of night blindness in Bashagard in 2011.

2. Materials and Methods

This descriptive cross-sectional study was done in the winter of 2011 in the Bashagard district, located in Hormozgan province. Considering the prevalence of night blindness in different studies (2%) and a confidence interval of 95%, a sample size of 819 was selected. Considering the geographical diversity of the Bashagard district, cluster sampling was done in order to perform the study. Therefore, the calculated sample size was divided between the covered populations of five health centers (Goharan, Tisoor, Tidar, Sar Dasht, and Jakdan). Finally, the samples in each center were selected using systematic sampling.

A checklist (including demographic data such as name, family name, place of residence, covering health center, sex, age, and educational level) was used to collect the data. In the second section, the individuals were asked about their disturbance in night vision. The data about the duration of the disease and treatments received for the disease were also recorded. The third section concerned the patient's history of eye trauma, surgery, and ophthalmic infection. In the final section, some questions about nutrition and meat, fruit, and vegetable consumption were asked. The questionnaires were completed by health system personnel. Data was analyzed by using SPSS 19.0 software, using descriptive statistics.

3. Results

In this study, 819 people were included. Five of them were later excluded because of incomplete data. The data of 814 were analyzed. Among the participants, 383 (47%) were male and 431 (53%) were female. The mean age of the participants was 26 ± 18.6 years. Table 1 shows the frequency and percentage of the studied people in each of the five health centers.

Table 1. Frequency and percentage of night blindness in the study based on country and health centers

Country	Health center	Households	Studied households	Population studied	Country population	Frequency of night blindness	%	Country prevalence
Beshno	Tidar	66	10	53	309	5	15.6	9.43
Bikh Kahnoo		85	10	43	376	2	6.3	4.65
Dastgerd Dargaz		126	10	57	622	2	6.3	3.50
Biverch		112	10	36	516	1	3.1	2.77
Kolahoo		74	10	54	389	1	3.1	1.85
Gerehkoo		27	10	55	153	1	3.1	1.81
Tisoor	Tisoor	50	10	48	228	1	3.1	2.08
Kooh Heydar	Jakdan	156	10	53	766	4	12.5	7.54
Keshmigi		47	10	41	175	3	9.4	7.31
Dargazen		94	10	48	429	1	3.1	2.08
Cistomacity	Sardasht	154	20	74	242	7	21.9	9.45
Sardasht		253	40	203	1031	3	9.4	1.47
Khomeini-shahr	Goharan	58	10	49	333	1	3.1	2.04
Total	Total	1302	170	814	5569	32	100	3.93

Among the 814 people studied, 32 had disturbances in their vision at night. Therefore, the prevalence of night blindness is about 3.93% in Bashagard. The mean age of the patients with night blindness was 40.8 ± 20.9 years. The

youngest individual with night blindness was 5 years old and the oldest one was 70 years old. Twelve people in Tidar, ten in Sar Dasht, eight in Jakdan, one in Goharan, and one in Tisoor had night blindness. Nineteen females and thirteen males had night blindness. Therefore, the prevalence of night blindness in males and females was 3.4% and 4.4%, respectively. Nineteen of the patients with night blindness (59.4%) were uneducated. The mean duration of the disease was 2.5 years. Among all patients, two (6.25%) had physician visits and were using drugs for their disease. Another four (12.5%) had physician visits and were using glasses for their disease. One (3.1%) had a history of eye trauma, another one (3.1%) had a history of eye infection, and one (3.1%) also had a history of eye surgery.

Twenty-one patients (65.6%) hadn't met the daily recommended consumption of fruits and vegetables, one (3.1%) hadn't even met the once-a-week recommended meat consumption, and three (9.4%) hadn't met the twice-a-week milk and dairy recommended consumption. Among the 814 people studied, seventy-four were 2 to 6 years old; among them, one (1.4%) had night blindness. Of 341 women between 15 to 49 years old, six among them (1.8%) had night blindness.

4. Discussion

Night blindness is a health issue with many different etiologies. One of the most important known etiologies is vitamin A deficiency (8). According to WHO statistics, the prevalence of night-blindness is less than one percent, meaning a mild to moderate prevalence (9). In the current study, we found that the prevalence of night-blindness is 3.93% in Bashagard, which is three times greater than the average national prevalence. Studies and statistics in Sistan-O-Baluchestan indicate a similar situation. The prevalence of visual disorders and ophthalmic diseases are higher in this province, which may be due to vitamin A deficiency. The prevalence of night blindness in Beshno and Cistomacity (9.43% and 9.45%, respectively) indicates a higher prevalence in some areas of Bashagard, which calls for immediate action.

Vitamin A plays a vital role in prevention of the disease and development, in addition to its role in the visual system. It is especially important in children 2 to 6 years old and pregnant women (10). Another important point in this study was that about 60% of the participants are non-educated. Therefore, they have a low socioeconomic level and need support and attention. According to WHO indexes, vitamin A deficiency is a important health issue in areas with a prevalence of 1 to 5 percent of night blindness (9). Therefore, our findings show that vitamin A deficiency is an important health issue in Bashagard. Vitamin A deficiency in rural areas and towns in Hormozgan is shown in previous studies and needs the attention of health system policy makers. It is shown that vitamin A supplementation and nutrients and also diet changes in the areas with significant levels of vitamin A deficiency can significantly decrease ophthalmic and visual problems.

5. Conclusion

In this study, the initial assessment of a health issue problem in Bashagard was done. We recommend other studies on the measurement of vitamin A serum level, ophthalmic assessment, and specific tests and interventions in the study population.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All of authors contributed to this project and article equally. All authors read and approved the final manuscript.

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