

# Eye Injury Pattern Analysis in the Republic of Uzbekistan

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**Abstract** The study of eye injury in the Republic of Uzbekistan indicates the need for a differentiated approach to the tactics of patient management and requires the development of algorithms of rehabilitation measures, taking into account the mechanism of trauma, the volume of damage, the terms of circulation and introducing them into the standards of treatment. Analysis of the structure of eye injury in Uzbekistan for the period 2015-2019 revealed a preponderance of domestic injuries (53.4 per cent) among men (65.1 per cent) of the most working age (66.1 per cent) with severe (52.1 per cent) and particularly severe (20.3 per cent) injuries.

**Keywords** Eye injury, Republic of Uzbekistan, Dynamics of distribution 2015-2019

## 1. Relevance

Trauma of the visual organ is one of the most socially significant problems of modern ophthalmology due to high prevalence, complexity of treatment, severity of outcomes, high frequency of disability of the victims, among which young, able-bodied people prevail. Nowadays, the visual organ injuries occupy the leading place among the causes of visual impairment and blindness all over the world and continue to be one of the most important medical and social problems, as they most often occur both at home and at work [1,2,3].

Traumatic eye damage is one of the causes not only of vision loss, but also loss of the information important organ. Their share is from 2 to 15% of the total number of injuries in the organism. According to Fulcher T.P. and co-author. (2002), there are about 55 million eye injuries worldwide annually, which in 1.6 million patients lead to blindness, mainly due to severe eye damage [5,6,7].

Despite significant progress in diagnostics and surgical treatment, the problem of eye injury in Uzbekistan remains unsolved and important not only from a medical but also from a social point of view, as the analysis of specific statistical indicators characterizing their causes is necessary for making optimal decisions regarding treatment tactics. [1,8].

Objective of the study: to analyze the structure of eye injury in the Republic of Uzbekistan over a 5-year period depending on the mechanism of injury (2015-2019) [1,8].

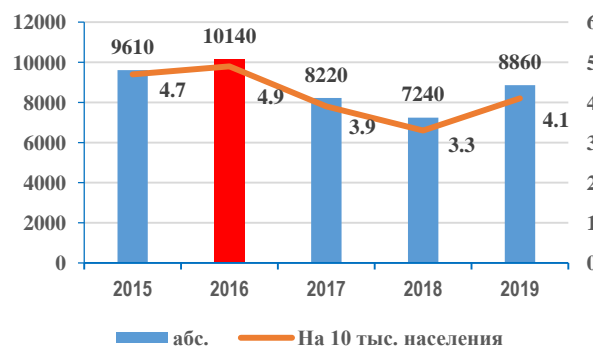
## 2. Materials and Methods

A retrospective analysis of the structure of eye injury in the Republic of Uzbekistan was conducted for the period 2015-2019. In total 44070 cases of eye injury among adult population were registered. The main documents used to study hospitalized morbidity were excerpts from "Disembarkation cards" (form 236), medical records and registers of inpatients.

Statistical methods of research were used - absolute and intensive indicators were studied (per 10000 population). The analytical method has been applied in studying the structure of eye injury and in comparative studies of frequency (intensity) indicators among different groups of the population (age, social, gender and other indicators).

All patients underwent standard ophthalmologic examinations; review radiography of orbits in two projections; Comberg-Baltin radiography for localization of fragments; ICCT, MRI.

## 3. Results and Discussion



**Figure 1.** Eye injury rate in the Republic of Uzbekistan for 2015-2019 (Figure 1)

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During the analysis of eye injury in the Republic of Uzbekistan for the period 2015-2019 a total of 44070 cases of eye injury among adults were registered (Fig. 1).

The eye injury rate per 10,000 population was 4.7% in 2015, 4.9% in 2016, 3.9% in 2017, 3.3% in 2018, and 4.1% in 2019, respectively. The average number of injuries recorded during these years was  $8814 \pm 511.1$  cases per year. There was a sharp rise in injuries to 10140 cases in 2016, a gradual decline to 7240 cases in 2018 and a moderate rise to 8860 cases in 2019. (Fig. 1).

The analysis of regional distribution of eye injury indicators revealed a significant decrease in annual indicators for the Republic of Karakalpakstan, Andijan, Navoi, Samarkand, Syrdarya, Kashkadarya and Tashkent regions (Table 1).

**Table 1.** Eye injury rate by region of Uzbekistan for the years 2015-2019

Region	2015 г	2016 г	2017 г	2018 г	2019 г
Republic of Karakalpakstan	740	870	810	500	780
Andijan	540	1190	750	560	660
Bukhara	480	440	390	350	390
Zhizzakskaya	480	480	440	600	510
Navoi	450	610	550	240	430
Namanganskaya	720	1140	740	740	870
Samarkandskaya	800	960	760	610	820
Syrdarya	1010	690	530	370	580
Surkhondarya	550	450	380	520	530
Kashkadaryya	600	560	380	330	440
Fergana	1650	970	900	850	920
Khorezm	850	850	780	740	960
Tashkent	310	210	260	160	290
Tashkent	430	720	550	670	680
Only .	9610	10140	8220	7240	8860

In Bukhara, Namangan, Surkhondarya and Khorezm oblasts, the values remain unchanged, while in Jizzak oblast and Tashkent city, an upward trend in this indicator is observed (Table 1).

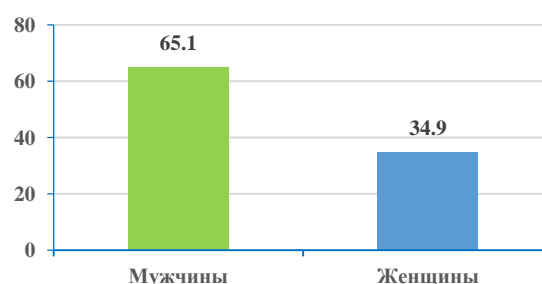
Thus, the level of eye injury has its significant regional characteristics depending on the regions of the Republic of Uzbekistan, with a moderate increase in the indicator in some regions, which indicates insufficient attention paid to this problem. On the other hand, this fact may indicate an improvement in the quality and availability of highly qualified specialized medical care for the population, as well as possible migration of rural population to large cities.

When examining the level of hospital and outpatient injuries of the visual organ, the ratio in 2015 was 1040 (10.8 per cent) and 8570 (89.2 per cent), and in 2016. 1325 (13.1%) and 8815 (86.9%), in 2017. 803 (9.8%) and 7417 (90.2%), in 2018. 715 (9.9%) and 6525 (90.1%), in 2019. 831 (9.4%) and 8023 (90.6%), respectively (Fig.2).



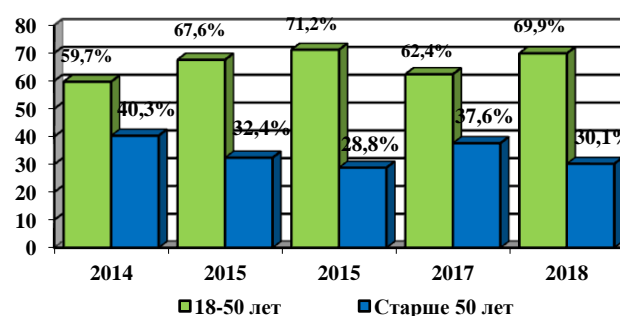
**Figure 2.** Ratio of hospital to outpatient injury in the world. (Republic of Uzbekistan for 2015-2019)

A study of the gender ratio in the structure of injuries during the study period revealed a predominance of men - 29110 cases (65.1%), while women were 1,590 (34.9%) (Figure 3).



**Figure 3.** Dynamics of the gender ratio (in %) in the injury pattern

The study of the age ratio has shown that the highest frequency of cases of eye injuries is in persons from 18 to 50 years old, amounting to 2015. - 5730 (59.7%), in 2016 - 6850 (67.6%), in 2017. - 5850 (71.2%), in 2018. - 4,520 (62.4%) and in 2019. - 6189 (69.9%) (Fig. 4).



**Figure 4.** Dynamics of age ratio (in %) in the structure of visual impairment

In the majority of cases of damage to the visual organ were received by victims in domestic conditions - from 4490 cases (46.7%) in 2015, 5670 (56%) in 2016, 3890 (47.3%) in 2017, 4030 (55.7%) in 2018, and 5,466 (61.7%) cases in 2019. As for injuries not related to or related to production, their proportion is smoothly declining, averaging  $4.7\% \pm 0.7$  and  $41.8\% \pm 3.57$  cases, respectively (Figure 5).

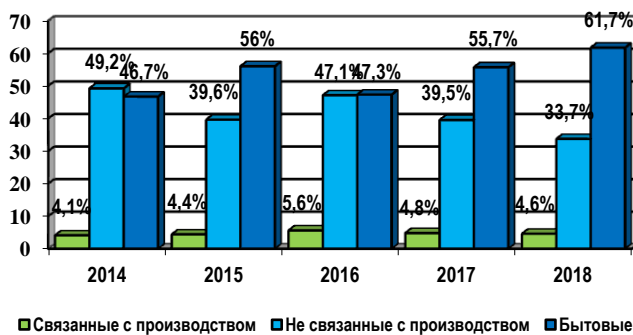


Figure 5. Dynamics of visual injury distribution (%) eye injury

Among all work-related injuries, the ratios of industrial, agricultural, transport and other injuries varied and varied from year to year. Thus, in 2017 industrial and agricultural injuries accounted for 200 (43.5%) and 17 (37%) cases respectively. In the following years this ratio changed, while

in 2019 the share of industrial and agricultural injuries in the dynamics significantly decreased, amounting to 127 (31.1%) and 122 (29.9%) cases respectively. In 2017-2019 there is a trend of relative decrease in the number of agricultural injuries and increase in the number of work injuries. In the dynamics of agricultural injuries it is worth noting that in 2015 the number of such injuries was 1.4 times higher than in 2019 and amounted to 43.6%. The share of injuries related to transport also increased in 2019 (24.5%), which was 1.4 times higher than in 2016 (Table 2.). In our view, such results are associated with an increase in the share of the population employed in the industrial sector of the economy and the rapid development of the Republic's transport infrastructure in recent years.

Among injuries not related to production, there was an increase in the number of street injuries in 2016 3010 (74.9%), while the ratio of transport, sports injuries did not change in different years of observation (Table 3).

Table 2. Distribution of Eye Injuries Associated with Production in the Republic of Belarus. depending on the cause

Type of injury	Годы									
	2015		2016		2017		2018		2019	
	абс.	%	абс.	%	абс.	%	абс.	%	абс.	%
Smart Label	110	28,2	160	35,5	200	43,5	150	42,9	127	31,1
Selskoho-	170	43,6	190	42,2	170	37	110	31,4	122	29,9
visual	90	23,1	70	15,6	80	17,4	70	20	100	24,5
Transport -	20	5,1	30	6,7	10	2,1	20	5,7	59	14,5
naya	390	100	450	100	460	100	389	100	408	100

Table 3. Shows an increase in the number of traffic injuries in 2016 (74.9%), while the ratio of sports injuries did not change in different years of observation (Table 3). Distribution of eye injuries unrelated to production in depending on the cause

Type of injury	Годы									
	2015		2016		2017		2018		2019	
	абс.	%	абс.	%	абс.	%	абс.	%	абс.	%
	2510	53,1	3010	74,9	2510	64,9	1750	61,2	1635	54,8
	1290	27,3	750	18,7	960	24,8	890	31,1	798	26,7
Street	120	2,5	90	2,2	110	2,8	80	2,8	93	3,1
Transport -	810	17,1	170	4,2	290	7,5	140	4,9	460	15,4
naya	4730	100	4020	100	3870	100	2860	100	2986	100

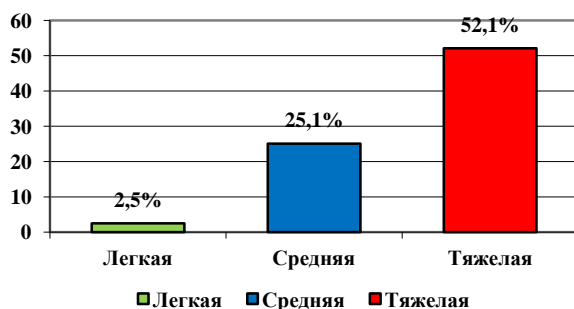


Figure 6. Distribution of patients by injury severity in the Republic of Uzbekistan for the period of 2015-2019

The degree of severity of an eye injury was assessed according to the classification of P.I. Lebekhov (1974) [4].

All cases of eye injuries were distributed as follows: the 1st (mild) degree of severity accounts for 1102 (2.5%); the 2nd (moderate) degree - 11062 (25.1%); the 3rd (severe) degree - 22960 (52.1%); the 4th (particularly severe) degree - 8946 (20.3%) cases, respectively (Fig. 6). Thus, 72.4% of patients with eye injuries in the Republic of Uzbekistan in 2015-2019 were diagnosed with severe and especially severe injuries, which undoubtedly indicates the social significance of the problem.

Thus, the analysis of the structure of eye injury in the Republic of Uzbekistan for the years 2015-2019 shows its fluctuations from 59.95 to 85.88% per 10,000 of the population, with a predominance of domestic injuries 23533 (53.4%) among men 28822 (65.1%) of the most able-bodied age 29130 (66.1%). A large proportion is occupied by a

heavy injury rate of 22960 (52.1%) and a particularly heavy injury rate of 8946 (20.3%), which significantly increases the risk of complications.

All above-stated testifies to high social importance of a investigated problem and necessity both search of new ways of perfection of specialized stationary medical aid to victims with an eye trauma, and development of effective ways of prevention of eye trauma.

## 4. Conclusions

The study of eye injury in the Republic of Uzbekistan indicates the need for a differentiated approach to the tactics of patient management and requires the development of rehabilitation algorithms, taking into account the mechanism of injury, the volume of damage, the duration of circulation and their introduction into treatment standards.

Analysis of the structure of eye injury in Uzbekistan for the period 2015-2019 revealed a predominance of domestic injuries (53.4 per cent) among men (65.1 per cent) of the most working age (66.1 per cent), with severe (52.1 per cent) and particularly severe (20.3 per cent) injuries.

## REFERENCES

- [1] Камилов М.К., Камилов Х.М. Клиника, лечение и профилактика промышленных повреждений органа зрения // Ташкент, 2019.-245 с.
- [2] Гундорова Р.А. Современная офтальмотравматология / Р.А. Гундорова, А.В. Степанов, Н.Ф. Курбанова. — М.: Медицина, 2007. — С. 28-29.
- [3] Волков В. В. Травма глаза (понятие, распространенность, эпидемиология, этиопатогенез, госпитализация, диагностика, классификация) / В. В. Волков, Э. В. Бойко, М. М. Шишкин [и др.] // Офтальмохирургия., 2005. -№ 1. - С. 13-17.
- [4] Лебехов П.И. Пробоные ранения глаз / П.И. Лебехов.- М.: Медицина, 1974 г.-208 с.
- [5] Aaberg T. Trauma: Principle and technik treatment /T. Aaberg, P. Sternberg // Retina /Ed. by Ryan. - 2001. -P. 144.
- [6] Ashok G. Clinical Diagnosis & Management of Ocular Trauma / G. Ashok [et al] // К. - 2009. - P.300-310.
- [7] Banta, J. T. Ocular trauma / J. T. Banta. - 6th ed. - Philadelphia: Elsevier Saunders; 2013. P. 2-25.
- [8] Changes in the Incidence of Eye Trauma Hospitalizations in the United States From 2001 Through 2014 / Iftikhar M, Latif A, Farid UZ, et al.//JAMA Ophthalmol. 2019 Jan 1;137(1): P.48-56.