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## Impact of Prime Minister Ujjwala Yojana on ocular trauma in the tribal belt of India

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### ABSTRACT

*We wanted to study the impact of Ujjwala yojana on ocular injuries caused by the use of wooden sticks during cooking. This is a retrospective cohort study. We retrieved the data from the electronic medical record (EMR) of ocular injuries caused by the use of wooden sticks during cooking before and after launching of Pradhanmantri Ujjwala yojana, a government of India flagship program, in which free LPG connections are given to below poverty line (BPL) families. We collected the data regarding ocular injuries caused by the use of wooden sticks during cooking. During our study, period 8,17,336 new LPG connections were provided under this scheme in the study population. We enrolled 3261 ocular injury cases; of which, 171 (5.3%) eyes were found to have ocular injuries because of using wooden sticks during cooking. We divided ocular injury cases that are caused by the use of wooden sticks during cooking into two groups: before and after launching of the Ujjwala yojana. We found that the number of eyes injured before and after the launch of the scheme are 93 (54%) and 78 (45%), respectively. The difference between the two groups was statistically significant ( $p=0.000$ ). Ujjwala Yojana is beneficial in reducing ocular injuries caused by the use of wooden sticks during cooking.*

**Keywords**— Ocular injuries, PM Ujjawala Yojana, Wooden stick

### 1. INTRODUCTION

Trauma is a leading cause of monocular blindness in the developed countries; however, only a few studies have addressed this problem in rural areas. [1] The aetiology of ocular injury in rural areas is likely to differ from that in urban areas, and it is an important fact to investigate [2-4]. Any preventive strategy requires knowledge of the cause of injury, which may enable more appropriate targeting of resources toward preventing such injuries. Eye trauma is a critical, but potentially preventable, the burden on both victims and society as a whole. [3]

Open globe injury is associated with a breach on the wall of the eyeball, which may be associated with the entry of organisms into the globe. The vegetative injury is known to cause infection, particularly fungal infection, which may hamper final visual outcome [1-4,6]

Wooden sticks are known the cause of ocular injuries in tribal areas (ref). One of the major activities during which the injury occurs is the preparation of sticks for cooking (7,8). This injury occurs to all poor people.

The government of India has recently launched an initiative named Ujjwala yojana to provide free cooking gas connections to people who are below poverty line This scheme has started from 1<sup>st</sup> May 2016.[8]

The objective of this study was to find out the effect of Ujjwala intervention on the occurrence of eye injuries caused by the use of wooden stick during cooking.

### 2. MATERIAL AND METHODS

This is a Retrospective cohort study. We obtained the approval from the hospital administrators and research committee to conduct this study and received participants' written consents.

The study was conducted at a tertiary eye care centre situated in the Dahod district of central western India. This hospital is situated in the tribal belt of Gujarat, Madhya Pradesh, and Rajasthan, and it is a major centre for ocular trauma.

All Ocular injury cases that were diagnosed and managed between January 2015 and July 2018 were enrolled in our study. Patients consenting to participate and not having other serious body injuries were included.

- All ocular injury data from the proposed 9 districts and segregated injuries caused by the use of wooden sticks during cooking was retrieved.
- Two groups were created: ocular injuries before and after Ujjwala interventions.
- Incidences of ocular injuries caused by the use of wooden sticks during cooking before and after Ujjwala interventions were compared.
- Data from our electronic medical records, exported to the excel sheet, and analysed by SPSS22 using cross-tabulations and other analytic tools were collected.

### 3. RESULTS

Ujjwala initiative has distributed 8,17,336 of liquid petroleum gas connections to below poverty line families residing in our study areas. We enrolled 3261 ocular injury cases; of which, 171(5.3%) eyes were found to have injuries because of using wooden sticks during cooking. The mean age of injured people was 41.1+/-13.8, and 46.8% were females. A total of 1695 eyes were injured before the starting of Ujjwala yojana; of which, 93 were because of using wooden sticks during cooking. In contrast, the number of injured eyes post-intervention was 1566; of which, only 78 were caused by the use of wooden sticks during cooking.

Table 1 shows age and sex distribution of population having eye injuries during cooking. Table 2 shows the number of injuries pre and post-Ujjwala intervention. Table 3 shows a comparative study of incidences of ocular injuries caused by the use of wooden sticks during cooking before and after the Ujjwala intervention.

### 4. DISCUSSION

We enrolled 3261 no of ocular injuries; of which, 171 eyes were found to have injuries due to use of wooden sticks during cooking. The mean age of injured people was 41.1+/-13.8, and 46.8% were females. Ujjwala yojana is an initiative first of its kind during which 8,17,336 new LPG connections provided. We could not find any other study regarding this in past. We know that the ocular injury is a major cause of monocular blindness worldwide (4). The wooden stick is one of the important objects of injury in tribal areas.

Shah et al and Khatri et al have also reported this [1,4,7] Many studies have been published in this context, and advocacy has been done to governments; but, this was not useful as the incident did not drop [4,7,10] Ujjwala intervention was found to reduce incidences of ocular injuries significantly (Table 3, p=0.000).

The limitation of the present study is that it was conducted in rural tribal prominent districts; so, its findings may not be considered important in regard to urban areas. However, this study covered a large (100 million) population, which is important for public health in our country.

### 5. CONCLUSION

Ujjwala yojana initiative has made a significant difference in ocular injuries during cooking amongst the tribal population of western and central India.

### 6. REFERENCES

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### APPENDIX

**Table 1: Age and sex distribution**

Age Category	Sex		Total
	Female	Male	
<20	3	7	10
20 to 30	24	14	38
31 to 40	14	24	38

41 to 50	15	21	36
51 to 60	24	25	49
Total	80	91	171

**Table 2: Eye injury before and after Ujjwala intervention**

Category	Number	Percent
Before Ujjwala intervention	93	54.4
After Ujjwala Intervention	78	45.6
Total	171	100.0

**Table 3: Comparative Study before and after Ujjwala intervention, P=0.000**

	Before Intervention	After Intervention	Total
Pre Intervention	0	78	78
Post Intervention	93	0	93
Total	93	78	171

