Effect Of Kajal Application And Fuel Used In Kitchen On Ocular Health Of School Children In Rural Haryana, India

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Citation

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Abstract

Objectives: To study the effect of fuel used and kajal application on ocular health of school children (6-15 years). Study Design: Cross-sectional. Setting: Govt. Senior Secondary Schools of Block Lakhanmajra Haryana, India. Participants: 1265 school children (6-15 years). Method: Out of 16 Govt. Senior Secondary Schools, 4 were randomly chosen. Students aged 6-15 years studying in class 1 to 10 were included in the study. Tests performed were Visual acuity (Snellen's E chart), Cover Test, Ocular motility and External examination by torch, lens and loupe. The findings of clinical examination were recorded on a pre-tested Performa. Statistical Analysis: After collection, the whole data was compiled; analysed (Systat-12) and appropriate statistical tests like simple proportions and chi-square (χ^2) tests were applied. Results: Out of 1265, 769 students (60.8 %) were regularly using kajal. Percentage of eye problems was similar (35%) in both the conditions whether applied kajal or not. Prevalence of eye diseases was more in students (45%) from homes with open kitchen as compared to those students (34.4%) from homes with a separate kitchen. The open type of kitchen was significantly associated with different eye problems. Prevalence of eye problems was more (47.5%) in students in whom home dung or wood only were used as fuel as compared to those (28.7%) where LPG is also used regularly along with dung/wood. Conclusion: The study explores that the use of dung fuel is not good for eye health. A small tika of kajal on the sole of the foot or at the hairline on the forehead can be put if it is necessary because of traditional reasons of warding off the evil eye.

INTRODUCTION

Kohl or kajal or surma to a newborn's eyes has been an age-old tradition in India. Relatives and friends may advise to apply surma or kajal to newborn's eyes to ward off the evil eye and to make the eyes look bright and large.
Paediatricians recommend that baby's eyes should be kept free of any application as it can lead to watery eyes, itching and infections. Also, when kajal or surma is washed off during a bath it passes down through the nasolacrimal duct, therefore, the kajal or surma can easily block it and cause infections. Furthermore, the cornea or the central, black part of the eye is very sensitive to touch and temperature.
Dung-cake (bricked and dried animal dung) is being used as a cooking fuel by poor people in many South Asian countries including Nepal, India, Bangladesh and Pakistan. For the rural farmers who rear large ruminant animals, the dung cake fuel involves no cash cost. The dung is available and cost of labour is very low for women and children in rural areas. Burning animal dung also releases carbon dioxide to contribute to the green house gases in the atmosphere.
Almost half (49 percent) of households in India cook with wood, and 11 percent use dung cakes. Ninety percent of rural households rely on solid fuel for cooking, compared with less than one-third (31 percent) of urban households3.
Objective
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MATERIAL AND METHODS

The present cross-sectional study was carried out from September 2006 to July 2007 in block Lakhanmajra, which is the field practice area attached to the department of Community Medicine, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. The study subjects were school going children in the age group of 6-15 years. Out of total 16 Govt. schools existing in the block, two girls' schools and two boys' schools were randomly selected and all the students between 6-15 years of age, studying in class 1st to 10th were included

in the study. The students were divided in to three age groups: 6-10 years, 10-13 years and 13-15 years. All concerned principals, teachers and students were briefed about the study. The students present on day of visit were included in the study. No follow up visits were done. The age of students was ascertained as per the school records. Test performed were Visual acuity (Snellen's E chart), Cover Test, Ocular motility and External examination by torch, lens and loupe. Visual Acuity (VA) test was performed using Snellen's E chart. If distant visual acuity was <6/6, then those students were subjected to refraction by ophthalmic assistant. VA <6/6 was taken as criteria of defective vision because criterion of low vision according to WHO (VA ≤6/18 in better eye) is already grossly subnormal for school children.

Information was collected on a pretested semi structured schedule. After collection, the whole data was compiled; analysed (systat-12) and appropriate statistical tests like simple proportions and chi-square (χ^2) tests were applied.

RESULTS

Prevalence of eye diseases was more in students (45%) from homes with open kitchen as compared to those students (34.4%) from homes with separate kitchen. The open type of kitchen was significantly associated with different eye problems. Table I shows relation of eye problems with type of kitchen.

Table 1

Relation of eye problems with type of kitchen

Type of Kitchen	Eye Problems		Total
	Yes [%]	No [%]	[%]
Separate	383 [34.4]	731 [65.6]	1114 [100]
Open	68 [45.0]	83 [55.0]	151 [100]
Total	451 [35.65]	814 [64.35]	1265 [100]

χ^2=6.577 (df-1), P=0.01*

Prevalence of eye problems was more (47.5%) in students in whom home dung or wood only used as fuel as compared to those (28.7%) where LPG is also used regularly along with dung/wood. The association between fuel used and eye problems was not significant. Table II shows relation of eye problems with type of fuel used.

Table 2

Relation of eye problems with type of fuel used

Eye Problems	Fuel		Total n=1265 [%]
	Dung/Wood without LPG n=756 [%]	Dung/Wood with LPG n=509 [%]	
Defective Vision	124 [16.4]	48 [9.4]	172 [13.6]
Squamous Blepharitis	108 [14.3]	48 [9.4]	156 [12.3]
Conjunctivitis	39 [5.2]	20 [3.9]	59 [4.7]
Vernal Conjunctivitis	47 [6.2]	17 [3.3]	64 [5.1]
Stye	9 [1.2]	0 [0]	9 [0.7]
Squint	6 [0.8]	4 [0.8]	10 [0.8]
Conjunctival Xerosis	26 [3.4]	9 [1.8]	35 [2.8]
Total	359 [47.5]	146 [28.7]	505 [39.9]

χ^2=5.665 (df-6), P=0.462

Kajal application was found to be the common practice in rural children especially in younger age groups and girls. Out of total, 769 students (60.8 %) were regularly using kajal. The association of kajal application with that of eye problems was not found to be significant. Percentage of eye problems was similar (35%) in both the conditions whether applied kajal or not. Table III shows relation of eye problems with kajal application.

Table 3

Relation of eye problems with kajal application

'Kajal' Application	Eye Problems		Total
	Yes [%]	No [%]	[%]
Yes	275 [35.8]	494 [64.2]	769 [100]
No	176 [35.5]	320 [64.5]	496 [100]
Total	451 [35.65]	814 [64.35]	1265 [100]

χ^{2}= 0.01 (df-1), P=0.920

DISCUSSION

In this study prevalence of eye problems were more (47.5%) in students in whom home dung or wood only used as fuel as compared to those (28.7%) where LPG is also used regularly along with dung/wood. Study done by Pant1 in Nepal reveal that use of dung fuel significantly increases the incidence of eye diseases. The use of dung fuel increases the incidence of eye diseases by 4.7 percent and per year increase in age increases the probability of having eye diseases by 0.3 Percent. An article on internet revealed2, that long term exposure to airborne particulate matter due to dung fuel has been associated with increased rates of cataracts and other eye problems.

According to NFHS-33, in India 32 percent of households cook inside the house without having a separate kitchen or room for cooking. Eleven percent of households in India cook with dung cakes. Smoke from solid cooking fuels such as wood and animal dung can lead to serious health problems including eye problems. Present study shows that prevalence of eye diseases were more in students (45%) from homes with open kitchen as compared to those students (34.4%) from homes with separate kitchen and the open type of kitchen was significantly associated with different eye problems. An article revealed4, that eye problems are the major symptoms found in women and children with home, where smoke is found due to cooking on wood, dung and crop waste.

Out of 1265, 769 students (60.8 %) were regularly using kajal. The association of kajal application with that of eye problems was not found to be significant. Percentage of eye problems was similar (35%) in both the conditions whether applied kajal or not. According to an article5, written for Baby Center India revealed, that baby's eyes should be kept free of any application as it can lead to watery eyes, itchiness and infections. Also, when kajal or surma is washed off during a bath it passes down through the nasolacrimal duct. Therefore, the kajal or surma can easily block it and cause infections. Dirty fingers, sharp and uneven fingernails can hurt baby's eyes. Apart from the immediate pain and the discomfort, there may be loss of vision.

CONCLUSION

Cooking indoors can increase exposure to indoor air pollution so cooking fuel is also the important point of concern. Measures should be taken to reduce the dung-cake fuel use. School health programs should focus on the ocular health of children. Health education activities should be intensified in schools and also in the community regarding signs and symptoms of ocular disorders. Finally, the aim of all health education activities should be to propagate awareness regarding eye care and to teach the essentials of ocular hygiene and eye healthcare.

STRENGTH AND LIMITATIONS

Strength

The age group and rural setting and extensive data available are strengths of the study.

Limitation

Being school based study, lower age group of students especially 6-7 years old were not able to respond properly regarding the type of fuel used and the type of kitchen.

References

1. Pant KP. Health Costs of Dung-Cake Fuel Use by the Poor in Rural Nepal. South Asia Network of Economic Research Institutes; June 2010.final report. no. 10 - 14

2. Cow Dung: A Dirty Subject Which Yields Big Results in India, Part 1[document on the internet]. Available from: http://www.fullstopindia.com/cow-dung-a-dirty-subject-which-yields-big-results-in-india-part-1.

3. National Family Health Survey NFHS-3 India 2005-06, International Institute For Population Sciences, Mumbai, India.

4. Smoke -- the Killer in the Kitchen: Indoor Air Pollution in Developing Countries, Practical Action, 2004 [document on the internet]. Available from: http://practicalaction.org/?id=smoke_background.

5. Is it safe to apply 'surma' or 'kajal' to my newborn's eyes?. Written for Baby Center India. November 2008; 2004 [document on the internet]. Available from: http://www.babycenter.in/baby/newborn/surma-kajal-expert/

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