

Eye safety practices in a rural Nigerian population in viewing solar eclipses.

Charles O. Omolase¹, Abdurraheem O. Mahmoud³, C.O. Fadamiro², A. A. Ayanniyi³,
E.O. Omolade. Bukola O. Omolase¹

¹Department of Ophthalmology,
Federal Medical Centre, Owo
Owo.

²Department of Ophthalmology,
State Specialist Hospital,
Akure.

³Department of Ophthalmology,
University of Ilorin Teaching Hospital,
Ilorin.

Summary

To assess the knowledge and eye safety practices adopted by respondents in Owo, Nigeria, during the last partial solar eclipse on 29th March 2006.

One hundred people who viewed the eclipse were randomly selected and interviewed by the authors. Information obtained with the aid of a questionnaire included biodata of respondents, knowledge of the occurrence and enlightenment on the hazards of the solar eclipse, and how they viewed the eclipse.

There were 67 males and 33 females. Majority of the respondents (97%) had foreknowledge of the occurrence of the eclipse, and 82.5% had been counseled on the ocular hazards of inappropriately viewing the eclipse. Forty-six percent (46%) of the respondents viewed the eclipse indirectly from reflection of the eclipse in a bowl of water, while 40% viewed it directly. Despite the fact that an overwhelming majority of the respondents had been appropriately counselled on the hazards of viewing the solar eclipse directly with the naked eye, a significant proportion still did.

Key words: Solar eclipse, Nigeria, solar retinopathy.

Request for Reprints to: Dr. Omolase Charles Oluwole,
Consultant Ophthalmologist,
Federal Medical Centre,
P.M.B. 1053,
Owo, Ondo State.

Introduction

On the 29th March 2006 there was solar eclipse over a broad swathe of the western parts of Nigeria including Owo town, where this study took place. Solar eclipses draw the attention of the general public to celestial events in the countries from which they are visible and broad public education programs are necessary to promote safe observation². An eclipse of the sun can only occur at new moon³. On an average there is a total solar eclipse visible somewhere about every 18 months⁴. The sun can be viewed safely with the naked eye only during the few brief seconds or minutes of a total eclipse⁵. It is never safe to look at partial or annular eclipse or the partial phases of a total solar eclipse without the proper equipment and techniques⁶. Failure to use proper observing methods may result in permanent eye damage or severe visual loss⁶.

The behaviour of the population during an eclipse is related to local beliefs. In a study carried out in Madagascar most of the population stayed indoor during the eclipse heeding the advice of local healers⁷. This attitude is however commendable as it will go a long way in reducing the ocular hazards of solar eclipse.

Individual cases of retinopathies after unprotected exposure to sunlight are frequently reported with psychiatric disorders⁸, after religious practices,^{9,10} or

related to drug abuse¹¹. Even though knowledge of harmful effects of sun gazing dates back to ancient times¹², cases of eclipse retinopathy are still observed and so strong preventive efforts should be made for future eclipses, especially for groups at risk¹³. It is in this light that this study has been designed to assess the knowledge and eye safety practices adopted by some respondents in Owo, Nigeria, during the last partial solar eclipse.

Subjects & Methods

One hundred people who viewed the same solar eclipse were randomly selected and interviewed between August and November, 2006. Information obtained with the aid of a questionnaire included biodata of respondents, knowledge of the occurrence and enlightenment on the ocular hazards of

the solar eclipse, and how they viewed the eclipse.

Ethical consideration:- Ethical approval was obtained from the ethical committee of Federal Medical Centre Owo prior to carrying out this study. Informed consent was obtained from each of the respondents.

Data analysis:- The data obtained with the aid of the study instrument was analysed using Epi-info version 6 statistical software.

Results

Socio-demographic characteristics: Table 1 shows the age and sex distribution of the 100 respondents. The median and modal ages were both 25 years with standard deviation of 6.1. There were 67 males and 33 females with a male to female ratio of 2:1.

Table 1: Age and sex distribution of Respondents

Age group(years)	Percentage
< 20	2.2
20 – 29	69.2
30 – 39	24.4
> 40	4.4
Sex	
Male	67
Female	33
Total	100

Table II: Source of information about the eclipse

Source of information	Frequency	Percentage (%)
Mass media	82	82
Church mosque	3	3
School	8	8
Peer group	5	5
Hospital	2	2
Total	100	100

The occupation of the respondents were as follows: civil servants (39%) trading (10%), schooling (22%), farming (1%) while others accounted for 28%. Ninety-six percent (96%) of the respondents had at least primary education, while 4% had no formal education. Most of the respondents (90%) were of the Yoruba ethnic stock, while 10% were Ibos. Christians accounted for 86% while 14% were Muslims.

Table III: Sources of counselling for respondents on the ocular hazards of inappropriately viewing solar eclipse.

Source	Frequency	Percentage (%)
1) Government officials	8	8
2) Health workers	9	9
3) Non governmental organization	3	3
4) Mass media	54	54
5) Peer group	8	8
6) Others	18	18
Total	100	100

Table IV: Mode of viewing the eclipse

	Frequency	Percentage (%)
Direct (naked eye)	40	40
Filter goggle	9	9
Bowl of water	46	46
Others	5	5
Total	100	100

Knowledge of occurrence and forewarning of ocular hazards: Ninety-seven percent (97%) of the respondents had foreknowledge of the eclipse while 3% had none. 82.8% had been appropriately counselled on the ocular hazard of viewing the eclipse directly with the naked eye. As shown in table II, 82% of the respondents had fore knowledge of the eclipse through the mass media. Table III shows the distribution of the sources of counseling of the respondents. Many of the respondents (54%) were counseled through the mass media.

Table IV shows the mode of viewing the eclipse. Most respondents (46%) viewed the eclipse indirectly from reflection of the eclipse in a bowl of water, while 40% viewed it directly with the naked eye. Many respondents (79%) were aware of the possible ocular hazards of the eclipse. Majority (92%) had not noticed any eye problem since they viewed the eclipse, while the few (8%) that did had only minor complaints.

Discussion

The majority of the respondents (92%) had fore knowledge of the occurrence of the solar eclipse. This is impressive as it confirms the fact that a lot of work was done by the authorities concerned to sensitize the people about the eclipse. The role of the mass media in enlightening people is also commendable as the majority of the respondents were informed about the eclipse through the mass media. Overall awareness regarding the harmful effects to eyes by viewing the eclipse directly was 79%. This is in keeping with the finding (83.2%) by Ali et al in Pakistan. In a study carried out in Madagascar 99% of patients knew that blindness was the main hazard. Such could also explain why the majority of the respondents in that study did not view the eclipse directly.

It is interesting that only few of the respondents had transient visual complaints after viewing the eclipse. It is also important to note that no patient had presented to the lone eye clinic in the community located at

FMC Owo with a complaint of sight-loss attributable to viewing the eclipse.

Even though the safest way to watch the eclipse is by indirect viewing using projection, none of the respondents adopted this method. This can be done by turning one's back to the sun and using 2 mm pinhole cut in a card to project the image of the sun onto a second card placed a meter away¹⁴. This image can be viewed safely¹⁴. Another safe means of viewing a solar eclipse is through a filter goggle. It is conceivable that more respondents than the nine who did might have used it if such goggles were readily available at affordable cost.

An overwhelming majority of the respondents had foreknowledge about the solar clipse and had also been counselled on the possible hazards of the eclipse on the eyes largely through the efforts of the mass media. Even then a significant proportion of the respondents still viewed the eclipse directly though none appeared to have developed any sight-threatening sequelae from viewing the eclipse. We recommend as follows:

- (1) The commendable efforts of the government in properly enlightening the populace on the occurrence of and the ocular hazards of directly viewing a solar eclipse should be sustained and even improved upon whenever future solar eclipse are about to occur.
- (2) Direct viewing of eclipse should be discouraged in strong terms as there is no effective treatment for solar retinopathy. There is the need to increase public awareness on the need to watch eclipse safely. However viewers who develop visual complaints should be encouraged to see an ophthalmologist for assistance.
- (3) Procurement and mass-distribution of solar eclipse viewing goggles by the government, non-governmental organizations, and individuals, to the populace at affordable prices would eliminate any hazard of ocular damage from viewing an eclipse directly.

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