Children's and their teachers' perceptions of what is good and what is bad for eyes: A qualitative study in Pakistan

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Abstract

Background

Research exploring children's and their teachers' perceptions of what is good and what is bad for eyes is lacking. This paper reports for the first time on perceptions of primary schoolchildren and their teachers of healthy and diseased eyes, things that keep eyes healthy and damage them, and what actions to take in case of an eye injury.

Methods

Using *draw and write technique,* 160 boys and girls (9-12 years old) attending four primary schools in Abbottabad district, northern Pakistan, were invited to draw pictures in response to a set of semi-structured questions and then label them. Sixteen teachers who were currently teaching the selected students were interviewed one-on-one.

Results

Analysis of text accompanying 800 drawings and of the interview scripts revealed that most children and teachers perceived healthy eyes to be those that could see well, and diseased eyes to be those which had redness, watering, dirty discharge, pain, and itching; or which had "weak eyesight" and blindness. Among things that students and teachers thought damage the eyes included sun, television, and sharp pointed objects, particularly pencils. Teachers noted that children with eye problems "have difficulty seeing the blackboard well", "screw up their eyes", and "hold their books too close".

Conclusions

We conclude that schoolchildren and their teachers had a good knowledge of eye health, but many of them had serious misconceptions e.g., use of kohl, medicines and eye drops keeps eyes healthy. Kohl is an important source of lead and even its low blood levels can have devastating effects on children's intelligence, and many body organs. Health education in schools must take into account their existing knowledge of and misconceptions about various aspects of eye health. Such steps if taken could improve the relevance of eye health education to schoolchildren.

Key words: perceptions, childhood eye diseases, refractive errors, eye health, schools, teachers, and children

Introduction

Screening for refractive errors and other common childhood eye diseases such as trachoma has been identified as a priority area for VISION 2020: The Right to Sight- a global initiative launched by World Health Organization and its partners to substantially reduce the burden of blindness and visual impairment by 2020[1]. It has been advocated that such screening can be effectively performed by teachers[2-4].

There is growing body of evidence that most schoolchildren needing glasses do not get them because their refractive errors are not detected, despite concerns that uncorrected refractive errors might not only hamper children's physical, cognitive, and psychosocial development, but also future employability and earning opportunities[5].

In areas endemic for trachoma and vitamin A deficiency, the WHO also recommends early detection of these diseases in schools and health education about ways in which these could be prevented and treated[6]. An estimated 150 million children have active trachoma, and 100 million children (less than 5 years of age) have vitamin A deficiency [7]. But several recent studies showing a high prevalence of severe vitamin A deficiency in children above 5 years of age calls for the need to review the practice of providing vitamin A supplementation to only under-five year old children[8-10].

A general lack of health care workers as health educators in developing countries supports further calls for involving teachers in eye health education. However, there is a lack of literature on what they themselves know about common eye diseases, and their detection and management.

Schools also offer an excellent opportunity for health education about prevention of eye trauma which is a regular event among children and the major cause of blindness

in one eye. In addition, trauma management is highly specialized and expensive which drains resources away from other important causes of visual impairment and blindness such as cataract[6]. As in all health education strategies, the starting point should be what the target audience already knows and does, and what they need to learn. Much health education, however, lacks this foundation[11]. As Oakley *et al* argue: 'health education that builds on an accurate understanding of the beliefs and knowledge about health of the target group is probably more effective than strategies which lack this foundation. Much health education for children and young people has not been based on what they themselves know, believe, or want to know. There has been a tendency for children's voices, in particular, to be silent'[12]. Although there are a range of qualitative methods to elicit information from children about a given health topic, a technique that has become particularly popular is the draw and write technique[13], which was first described by Williams and colleagues in 1989 [14]. This method has been used to explore the views of children about various health topics, including HIV/AIDS, drugs, and skin cancer [11, 15-17]. We used it to explore primary schoolchildren's perceptions of healthy and diseased eyes, things that keep eyes healthy and damage them, and what action to take in case of an eye injury. In additions, we interviewed teachers one-on-one to explore their perceptions of eye health i.e. how to detect common eye problems in children, what advice to give to children to keep their eyes healthy and what actions to take if something happens to a child's eyes.

Methods

This was a qualitative, school-based study involving 160 children (80 girls and 80 boys) aged 9-12 years and their 16 teachers (8 men, 8 women) in four primary schools (two

private, two government) in the Abbottabad district, northern Pakistan. In government-run schools the education is almost free, attracting children from lower socio-economic groups. Private schools generally cater for children from rich families. Two schools (one for boys and one for girls) were selected from the 2 categories, based on easy accessibility. Permission to conduct the study was obtained from the Ethics Review Committee of Pakistan Institute of Community Ophthalmology, the District Education Officers (DEO) for government schools, and head teachers of each school. Informed verbal consent was obtained from children. Children aged 9-12 years were selected because we assumed children below this age might not be able to understand how to use the draw and write technique. In each school, 40 children of eligible age were randomly selected and requested to respond to the following pre-tested questionnaire: What are the characteristics of a healthy eye? What do diseased eyes look like? What are the things that damage the eyes? What would you do to keep your eyes healthy? What would you do if an accident injures your eye?

The exercise was undertaken in classrooms, so that it appeared as an extension of a normal day activity. The draw and write technique was explained to them, and drawing material was distributed. Each question in turn was written on the blackboard in Urdu and English in government and private schools, respectively. Children were asked to respond to the question by drawing, and then labeling or describing it in the language they felt comfortable in. The children were told if any one of them was unable to write him/herself, he/she should tell the facilitator what they wanted to write who then wrote their views down verbatim. Children who were unable to understand the exercise were

given instructions in Hindko, Urdu, and Pakhtu languages as appropriate. All the sheets were collected before the next question was asked.

The questionnaire used to interview teachers was a modified version of the one used for children, and which had been piloted in a school in Charsadda district. It had one modified and two additional questions: How would you detect common eye problems in children? What would you advise children to keep their eyes healthy? What would you do if something happens to a child's eyes? All interviews were conducted in Urdu. In each school, we selected 4 teachers who currently taught the selected children. One of the investigators (KA), who had previous experience in conducting interviews and who received additional training for the study, interviewed teachers one-on-one in their schools. The interviewer encouraged respondents' participation by giving prompting questions: "Tell us more….," "Keep talking", "And…" Notes were taken during interviews, each of which lasted 30-45 minutes.

Data analysis

Children provided 800 drawings, and their accompanying text. Colloquial terms used by the children were translated in the classroom as soon as the exercise was completed. Labels were translated from Urdu into English. To avoid subjectivity, only labels and not drawings were assessed. The interview scripts were translated into English. Each script was read to get general and specific ideas. Similar themes from all interviews and labels were grouped and then organized into major categories and subcategories. Supporting quotations were selected to illustrate the main or atypical themes. All the data were analyzed using SPSS 10.0.

Results

Perceptions of healthy eyes

Most children and teachers perceived healthy eyes to be those that could see well (Table I and Fig. 1, 2) or those which are beautiful, bright, fresh-looking, and neat/clean. One student mentioned 'full of dignity' as a characteristic of healthy eyes. A small number of teachers believed they were “not squinted”. One teacher said “they should be straight.” Some teachers believed healthy eyes were those that do not have any signs and symptoms of disease such as discharge, watering, pain, and burning.

> “Healthy eyes are bright. They are neither too big nor too small. They should have good vision.” [A male teacher]
>
> “Healthy eyes are neither yellow nor red. Healthy eyes [do not] water or discharge. They should be clean and bright.”[A female teacher]
>
> “Healthy eyes can see well. Eyes have three colours. Eyes are to see with. Eyes are a great blessing of God. Without eyes, one can’t see anything.” [A girl from government school]
>
> “Healthy eyes enable human beings to see things well. A healthy eye is clean.”[A boy from private school]

Perceptions of diseased eyes

Two main themes that emerged from children’s and teachers’ responses were: red painful eye, and eyesight problems (Table II; Fig. 3-5). Most children and teachers mentioned diseased eyes as those that have redness, watering, dirty discharge, pain and itching. They also believed that diseased eyes were those that can not see well or have blindness or cataract. Five of the teachers said that diseased eyes squinted.

> “Diseased eyes are red and have blurred vision. They itch. Diseased eyes have cataract. They have poor vision. There is headache due to weak eyesight.” [A female teacher]

> "The colour of diseased eyes is a little different from that of normal eyes. Diseased eyes are red, and can not see well. They are painful too. They often water." [A boy from government school]
>
> "A diseased eye has weak eyesight. A diseased eye is sometimes red due to which you have to itch it, and it does not look clean."[A girl from private school]
>
> "When the eyes get diseased, the white of the eye becomes red. There are quick jerky movements. They are not straight. The lens sometimes comes out." [A male teacher]

Things that damage the eyes

The strongest message coming from teachers' and children's responses was their concerns about the adverse effects of very bright light, sunlight, watching television for too long, or sitting too close to TV, and chemicals, and diet(Table 3). A large number of teachers as well children perceived sharp pointed objects-such as pencils, sticks, stones, needles, wood, pens, and scissors to be eye-damaging (Fig. 6, 7). 14 students believed that books/book-reading were not good for eyes while 11 students reported "too much book-reading" was harmful. Many students implicated eating chillies, onion, eggs and beef in causing eye damage.

> "Looking at sun damages the eyes. Dim light damages our eyes. Chillies cause eye damage."[A boy from government school]
>
> "Things that can be damaging are: TV, video games, films, cartoons, etc. If children throw stones, pencil and pen into your eyes, it can be dangerous. If you look at TV for 2-20 hours it is harmful to your eyes."[A girl from private school]
>
> "Chalk dust, excessive TV watching and insect bite damage the eyes." [A female teacher]
>
> "Watching TV too close, say from around 10 feet, damage the eyes because TV emits rays. An accident can also damage the eyes. Quite often stones, pointed objects, nail and sharp light damage the eyes of children."[A female teacher]

> "Sharp light, smoke, dust and dirt, reading book while in a moving vehicle, taking ice-cream and hot tea and curry - all these things damage the eyes." [A male teacher]

How to detect common eye problems in children

As shown in Table IV, most teachers said such children have difficulty seeing the blackboard. Nearly half of them said these children hold their books too close. One teacher said such children often screw up their eyes when reading. Most teachers also said they also have other disease signs and symptoms such as redness, watering, rubbing, discharge, swelling, itching, and pain.

> "He cannot see the blackboard clearly. [They] cannot read the writing on the blackboard from back benches [So] we ask them to sit close to the blackboard. Eyes of such children water. They cannot read when the light deteriorates. They have pain in their eyes. Diseased eyes are red or yellow." [A male teacher]
> "They wear thick glasses. Their eyes start burning when they watch TV." [A female teacher]
> "Some of them come to us and tell us they cannot see the blackboard, TV and books." [A female teacher]

Recipe for healthy eyes

Most teachers said they would advise students to "wash their faces with clean water", and avoid sunlight, bright light, self-medication, reading in dim light, touching/ rubbing eyes with dirty hands, and "holding book too close"(Table V). Some teachers said they would advise children to also take vegetables, especially carrots, and milk. One teacher recommended vitamin A. But teachers had a number of misconceptions: some teachers said they would advise them to "splash water into your eyes", "see greenery", "use white kohl", or avoid "citreous and spicy food".

> "Keep your eyes clean in all sorts of conditions. Wash your eyes, when they are open, with clean water. Wash it three to four times a day. Do not look at something constantly for too long. When reading, the light should not come into

> your eyes, but it should fall on the book. Keep an appropriate distance between the book and eyes. Ideally it should be one and a half feet. Never look directly at the sun. Avoid reading book in dim light, in candle light and in lantern light. Do not use colour papers for writing. They will damage the eyesight. Only use white papers. However, very young children can use red papers. To keep eyes healthy walk barefooted in the morning dew. This should be done for 30-45 minutes. See greenery for 15-20 minutes a day." [A female teacher]
>
> "I will ask them to take vegetables such as spinach, avoid dust and pollution, (and) live in clean environment. The classroom should have good ventilation and a good blackboard." [A male teacher]

By contrast, children noted they would wear glasses (33.1%), use medicines (18.8%), and visit a doctor (5%) to keep their eyes healthy. More than a third of them indicated they would eat fruits, vegetables and nuts to keep their eyes healthy (Fig. 8, 9; Table IV). 26 students mentioned they will do face-washing and 13 students reported they would avoid books/book-reading to keep their eyes healthy. Over a quarter of them pointed out they would use certain home remedies/traditional medicines such as ice packs, kohl, and rose water to keep their eyes healthy. Sixteen students pointed out they would avoid playing with sharp/pointed objects. They also said they would "see greenery".

> "Seeing greenery keeps the eyes healthy. Putting drops into eyes keep them healthy. Taking apple sharpens the eyesight. One should never sit close to TV or watch it in darkness. One should not read books in sharp light. The use of kohl keeps the eyes well. We should protect our eyes from pencils."(A girl from government school)

Actions in case of an eye injury/problem

The majority of children (56.3%) indicated that they would "consult a doctor" if they injured their eyes (Fig. 10).

> "When our eyes get injured we will go to a doctor and act upon his advice, and will use the prescribed medicines." [A boy from the government school]

Seven students mentioned they would put kohl in their eyes while two students mentioned they would instill chillies. 64 children said they would use medicines, 50 children said ointment, 37 indicated eye drops, and 38 mentioned they would apply a bandage. 10 students mentioned they would undergo an operation. Only one student mentioned she would get her vision checked by a doctor in case of an eye trauma.

Teachers unanimously pointed out that they will manage themselves "minor eye problems" such as foreign bodies, redness, burning, and watering but would refer "serious" and "more severe" problems to a doctor.

> "If anything goes into a child's eyes, I'll ask him to avoid rubbing [them] because it may cause an injury. If the foreign body can be removed, we will remove it. If not, we'll contact a doctor. If there is burning, we will put ice packs on the eyes. This will reduce burning and redness. If there is dirty discharge, we'll clean his eyes with a handkerchief. If the problem is serious, then a doctor will be contacted." [A male teacher]

> "If something falls into eyes, we'll wash it. We will use eye drops and *Polyfax* eye ointment. We'll ask them to close them for sometime. If there is irritation due to light, we will ask her to stay in the dark. If there is redness, pain or loss of vision, a doctor would be contacted." [A female teacher]

Discussion

To our knowledge this is the first study to explore the perceptions of primary schoolchildren and teachers in relation to eye health. The results provide important insights into the understandings of common eye diseases among children. Most children and teachers had a good knowledge of various characteristics of healthy eyes, including seeing well and giving good cosmetic appearance. However, they also need to know that healthy eyes are those in which the eyelids open and close properly, the white is white, the cornea is clear, and the pupil gets smaller in bright light[18]. In our study only 12

children mentioned various parts of the eye- a finding which may be because children are not taught this. The guidelines on health education in schools, issued by the WHO, UNICEF and UNESCO recommend that children at this level be taught about the following parts of the eye: conjunctiva, cornea, pupil, iris and lens[19], but they make no mention of eyelids, which protect the eyeball and help lubricate the eye surface. One of the ways in which children could be taught parts of the eye is to ask them, ideally in their art class, to look at each other's eyes and draw what they see. When finished, they could be asked to label what they have drawn. Once they recognize different parts of eye, children could be taught various functions of the eye.

Students as well as teachers significantly noted two commonest presentations of diseased eyes: an irritable/red painful eye, and loss of vision. Two leading causes of red eye in developing countries are viral conjunctivitis (which gets better on its own), and trachoma. Teachers can play a vital role by controlling known risk factors for transmission of these two conditions: eye-hand contact, flies, and handkerchief- and towel-sharing. Health education programmes for schools also can play an important role in reducing the burden of trachoma by promoting in schools highly effective control strategies such as face washing, environmental improvement including fly control, and use of antibiotic azithromycin or tetracycline[20-23]. Similarly, students needs to be taught about uncorrected refractive errors because they adversely affect academic performance, increases the risk of trauma, and result in social isolation and stigma[4, 5, 24]. It was encouraging to note that teachers had a good understanding of how they would detect such problems. Having difficulty reading the blackboard and holding books too close are, as mentioned by teachers, important signs of refractive errors, but such

children are also likely to have short attention span, difficulty writing in straight lines, headache, and low self-esteem. By making good use of their observations and by learning how to test children for refractive errors, teachers can easily identify these children and refer them for refraction. Developing countries, including Pakistan, lack sufficient primary eye care workers to screen for refractive errors. In these settings, teachers if equipped with necessary knowledge and skills can play a vital role in reducing the burden of uncorrected refractive errors[3, 25].

It was interesting to note that the majority of the students and teachers perceived sun, TV, and other sources of light to be eye-damaging. Sun is a common source of ultraviolet radiation, which has been implicated in some studies as a risk factor for some age related eye conditions [26, 27], while prolonged staring at the sun can cause macular burns[28-30]. Children need to protect themselves from sun, but avoidance of sunlight may lead to vitamin D deficiency, which weakens bones, and stunts growth[31]. Similarly, TV could be, as mentioned by the students and teachers, eye-damaging, but it may also help intellectual development. Sharp pointed objects were reported as damaging the eyes, but none of respondents mentioned sports and the use of hazardous toys which are among the most common causes of eye injuries among schoolchildren[32-35]. Therefore health education programmes for schoolchildren must focus on these important causes of eye injuries. It was also interesting to note that many students as well as teachers felt that prolonged close-up work, such as reading damages the eyes. It is argued that prolonged reading may contribute to the development of myopia (shortsightedness) which is an important public health problem in several East Asian countries[36, 37].

Some of the very positive messages coming from teachers' as well children's responses are that many of them recognise the need to wash their faces, avoid sharp pointed objects and dust, visit a doctor and to eat fruits and vegetables. But they also need to be specifically aware of daily vitamin A requirements, and of foods that contain vitamin A, such as milk, liver, eggs, yellow fruits and dark green leafy vegetables. Around 100-140 million children worldwide have vitamin A deficiency. Each year an estimated 250,000-500,000 children become blind because of vitamin A deficiency, half of whom die within 1 year of becoming blind [7]. Students and teachers had many misconceptions of the ways in which eyes could be kept healthy. A third of the students reported they will use eye drops and ointment to keep their eyes healthy. But unnecessary use of medicine could be dangerous and may lead to serious eye complications. The irrational use of steroid drops and ointment may raise the intraocular pressure, a risk factor for a potentially blinding eye disease called glaucoma, and can cause cataract. 26 children said they would use kohl to keep their eyes healthy. Although kohl makes eyes look beautiful, it is an important source of lead in blood and cause of lead poisoning[38-41]. Several studies have shown that high levels of lead exposure leads to anemia, kidney diseases, and neurological disorders. Even low blood levels of lead have devastating effects on children's intelligence[42, 43]. Advising children to "splash water into your eyes" "avoid spicy or citreous food", or instill rose water in eyes could adversely affect their eyes because these are harmful practices. For example, avoidance of citreous fruits, hot spicy and bitter food and chillies may lead to vitamin and mineral deficiencies and thus ocular morbidity. Other misconceptions are merely traditional practices that neither

harm nor help, but they may be psychologically comforting, eg, seeing greenery. The only problem is that misconceptions stand in the way of real information.

Students' responses to the question about eye injury are equally significant as 56.3% of them believed they would contact a doctor if they injured their eye. Any injury of the eye should be considered a medical emergency because immediate medical care by an ophthalmologist is more likely to improve prognosis than delayed care. Many students mentioned they would use medicine, ointment or eye drops. But self-medication can often do more damage than good. A small number of students noted that they would put kohl or chillies into their eyes, which as discussed before are harmful eye practices. By contrast, teachers said they would manage minor eye problems themselves, but refer "severe" and "more serious problems" to the doctor. Teachers said they would use "rose water, water splashes, and icepacks to treat red eye; kohl to treat minor injury; and hot fomentation for foreign particles. But some of these are harmful eye practices and should be avoided. In addition, teachers cannot assess which eye problems are major and which are minor. Many problems listed as minor are actually sight-threatening conditions and need urgent medical attention.

Our study had the following limitations: the findings may not be generalisable because schools participating in the study were not randomly selected. Second, our use of draw and write technique was based on assumptions that drawing enables children to communicate ideas better than conversational language, which may not be the case.

Our study provides baseline data on schoolchildren's and their teachers' perceptions of eye health and could be used to design further research as well eye health education programme for schoolchildren in Pakistan and other developing countries.

Both groups had a good knowledge of eye health, but their misconceptions could adversely affect not only children's eye health but also intellectual growth. Health education for children must take into account their existing knowledge of and misconceptions about various aspects of eye health. Such steps if taken could improve the relevance of eye health education to schoolchildren.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

CG and KA conceived the report. KA collected the data, performed the statistical analysis, and drafted the manuscript. MAK, MDK, MBQ and CG contributed to review, and to the revision of the report. All authors read and approved the final manuscript.

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Table 1. Characteristics of healthy eyes as perceived by schoolchildren (n=160) in Abbottabad district of Pakistan.

Characteristics*	**Frequency (n = 160)**	**%†**
Can see well	**120**	**75.0**
Characteristics related to anatomy of eye	**27**	**16.9**
Contain white	18	11.3
Contain black	12	7.5
Have got pupil	12	7.5
Have got eyelids	9	5.6
Have got eyelashes	5	3.1
Characteristics related to good appearance	**25**	**15.6**
Are beautiful	15	9.4
Are big	7	4.4
Are bright	5	3.1
Are clean/neat	5	3.1
Allah's blessing	**20**	**12.5**
Absence of disease symptoms	**10**	**6.3**
Not watering	**7**	**4.4**
Answer was not clear	**9**	**5.6**

*Percents add to more than 100; respondents could mention more than one characteristics of healthy eyes.

† Only characteristics mentioned by at least 3 % students included in the table

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Table 2. Characteristics of diseased eyes as perceived by schoolchildren in Abbottabad district of Pakistan.

Characteristics*	**Frequency (n = 160)**	**%†**
Signs and symptoms of red eye	**113**	**70.6**
Are red	66	41.3
Have watering	25	15.6
Have dirty discharge	21	13.1
Are painful	10	6.3
Have allergy	10	6.3
Have bleeding	9	5.6
Have itching	6	3.8
Signs and symptoms of eyesight problems	**74**	**46.3**
Can't see well/ have weak eyesight	46	28.8
Are blind/can't see at all	23	14.4
Have cataract	23	14.4
Signs and symptoms related to size and	**24**	**15.0**
Have growth	16	10.0
Characteristics related to unfriendly	**10**	**6.3**
Are bad-looking	7	4.4

*Percents add to more than 100; respondents could mention more than one characteristics of diseased eyes.
† Only characteristics mentioned by at least 3 % students included in the table

Table 3. Children's perceptions of things that damage the eyes

Factors*	**Frequency (n = 160)**	**%†**
Factors related to light	**145**	**90.6**
Sun	115	71.9
TV	61	38.1
Bulb	14	8.8
Bright light	11	6.9
Dim light	5	3.1
Sharp pointed objects	**56**	**35.0**
Pencil	33	20.6
Stick	14	8.8
Stone	10	6.3
Needle	9	5.6
Wood	6	3.8
Pin	5	3.1
Habits	**36**	**22.5**
Book/book reading	14	8.8
Too much book reading	11	6.9
Diet	**31**	**19.4**
Chillies	26	16.3
Onion	7	4.4
Chemicals	**29**	**18.1**
Soap	22	13.8
Tear gas	6	3.8
Pollution	**29**	**18.1**
Dust including chalk dust	29	18.1
Smoke	6	3.8

*Percents add to more than 100; respondents could mention more than one things.
† Only characteristics mentioned by at least 3 % students included in the table

Table 4 Teachers (n=16) mentioning how they would recognise common eye problems in children

Eye problems *	*Frequency*
Problems related to vision	
Have difficulty seeing the blackboard	12
Hold books too close	7
Have difficulty watching TV or reading book	2
Cannot read books in dim light	1
Leave no space between words	1
Overwrite words that are already in place	1
Wear thick glasses	1
Are colour blind	1
Have chronic headache	1
Red painful eye	
Have redness	11
Have watering	9
Rub their eyes	7
Have discharge in their eyes	3
Have swollen eyes	3
Have burning sensation in eyes	2
Have pain in their eyes	1
Have trachoma	1
Have sticky eyes in the morning	1
Other eye problems	
Have yellow eyes	7
Have black circles around eyes	2
Are physically weak	2
Their eyes don't look fresh	1
Are drowsy	1
Closes his eyes with force	1
Blink too often	1
Have injury in the white of the eye	1
Have involuntary movements of eyes	1
Have a growth in the eye	1
Have poor body reflexes in sports	1
Often screw up their eyes	1
Their eyes gradually get smaller	1
Are cross-eyed	1
Have squint	1
Have sunken eyes	1

*Respondents could mention more than one eye problems.

Table 5. Teachers (n=16) mentioning how they would advise children to keep their eyes healthy

Type of advice*	***Frequency***
Advice related to cleanliness	
Wash your face with clean water	7
Splash water into your eyes	3
Avoid touching /rubbing eyes with dirty hands	2
Keep your eyes clean	1
Advice related to food	
Take vegetables	3
Take carrots	3
Take milk	2
Avoid spicy food	1
Avoid citrus food	1
Take balanced diet	1
Take vitamin A	1
Use proteins	1
Avoid very hot food	1
Eat cucumber	1
Use turnip	1
Use salad	1
Advice related to medication	
Contact doctor if there is an eye problem	2
Avoid self-medication	2
Use eye drops as advised by doctor	1
Use glasses if advised	1
Check eyesight every 6 months	1
Avoid lotions, chemicals, and beautifiers unless indicated	1
Use only time-tested kohl- the white kohl	1
Avoid use of kohl	1
Advice related to light and heat	
Use sunglasses	5
Avoid sunlight	5
Avoid sitting too close to TV	2
Avoid watching TV in darkness	2
Avoid watching TV while lying	1
Do not take a walk in cold wind	1
Advice related to reading	
Avoid reading in dim light	8
Do not hold book too close	3
Do not read while lying in bed	2
Read in sufficient light	2
Keep adequate distance between book and eyes	2
Do not read in a moving vehicle	1

Avoid reading in sharp light	1
If you cannot see the blackboard well, please contact me	1
Advice related to environment	
Avoid dust	3
See greenery	2
Avoid smoke	1
Take a walk on green grass	1
Plant trees	1
Advice related to injury prevention	
Avoid playing with pen/pencil	1
Do not hit each other with stone	1
Do not slap each other	1
Avoid rubbing eyes	1
Avoid striking head against hard objects	1
Avoid jumping down from a height	1
Advice related to other things	
Do not use colour papers. Use only white or red papers	1
Get enough sleep	1
Tell your father if there is any eye problem	1

*Respondents could give more than one advice

Table 6. Children's perceptions of what they will do to keep their eyes healthy

Actions*	Frequency (n=160)	%†
Glasses and drugs	**69**	**43.1**
Wear glasses	53	33.1
Use medicine	30	18.8
Visit doctor	8	5.0
Put eye drops	7	4.4
Sources of light	**67**	**41.9**
Avoid Sun	42	26.3
Avoid sitting close to TV	22	13.8
Avoid TV	7	4.4
Avoid bulb	7	4.4
Avoid candle light	5	3.1
Environment	**61**	**38.1**
See greenery	40	25.0
Avoid chalk	16	10.0
Avoid dirt	8	5.0
Diet	**56**	**35.0**
Fruits	*34*	*21.3*
Eat apple	28	17.5
Eat grapes	7	4.4
Eat mango	6	3.8
Food	*16*	*10.0*
Drink milk	16	10.0
Eat eggs	6	3.8
Eat meat	5	3.1
Vegetables	26	16.3
Avoid eating chillies	11	6.9
Eat carrots	9	5.6
Take vegetables	8	5.0
Nuts	*12*	*7.5*
Take almond	11	6.9
Habits	**47**	**29.4**
Do face-washing	26	16.3
Avoid books/book-reading	13	8.1
Traditional medicine/home	**41**	**25.6**
Put ice packs on eye	13	8.1
Use kohl	26	16.3
Put rose water (arq-e-gulab) in	5	3.1
Avoid putting pepper in eyes	5	3.1
Sharp objects	**16**	**10.0**
Avoid playing with pencils	14	8.8
Others	7	4.4

*Percents add to more than 100; respondents could mention more than one action.

† Only characteristics mentioned by at least 3 % students included in the table.

Fig. 1. Drawing by a girl from the government school of healthy eyes

1) Eye are to see with
2) We can't see without eyes.
3) Eye are a great blessing of God
4) Healthy eye have vision
5) Eyes have three colours

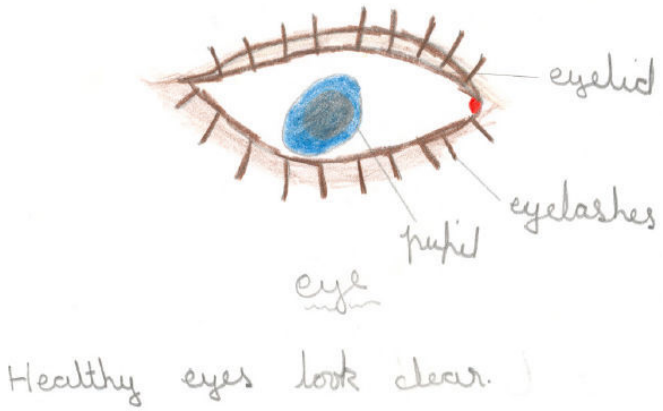
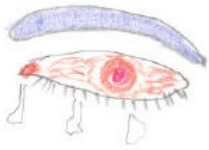
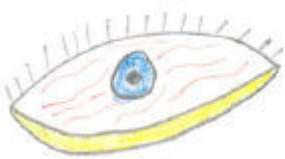


Fig. 2. Drawing by a girl from the private school of healthy eyes



"My eyes are diseased. They remain red all the times. And that is why they water."

Fig. 3. Drawing by a boy from private school of diseased eyes



"We can't see well with a diseased eye. A diseased eye is painful.

Fig. 4. Drawing by a boy from private school of diseased eyes

"This eye has cataract".

Fig. 5. Drawing by a boy from government school of diseased eyes

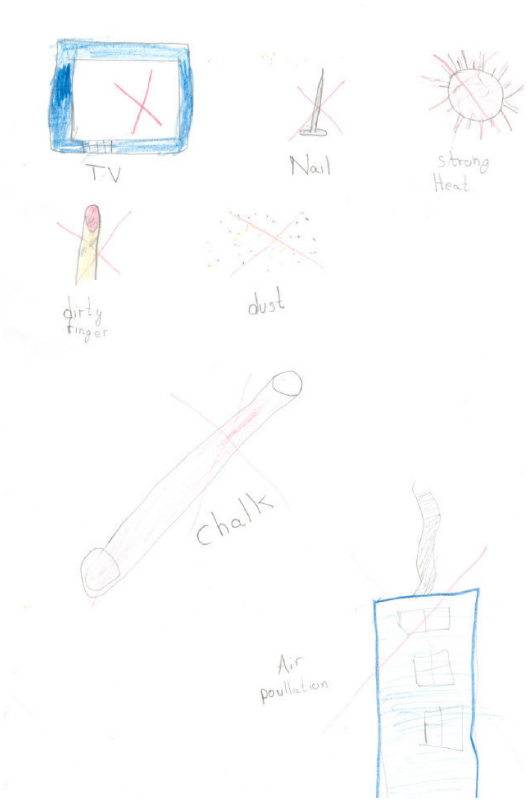


Fig. 6. Drawing by a girl from the private school of things that damage the eyes

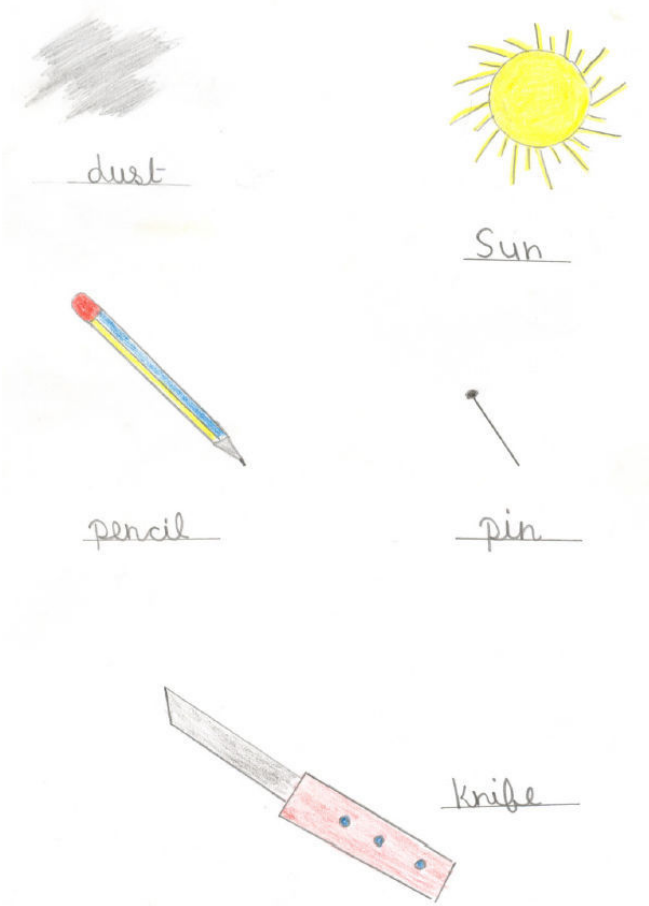
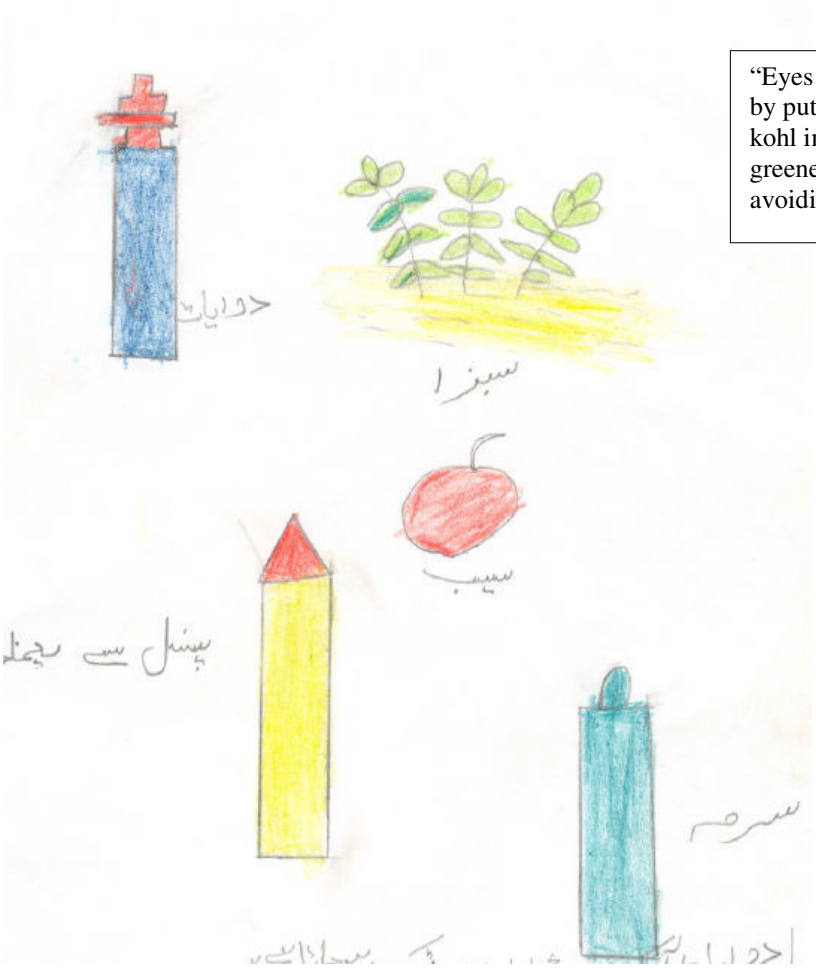


Fig. 7. Drawing by a girl from the private school of things that damage the eyes



"Eyes can be kept healthy by putting medicines and kohl in eyes; looking at greenery, eating apple, and avoiding pencil."

Fig. 8. Drawing by a girl from the government school of things that keep eyes healthy.

Fig. 9. Drawing by a girl from the private school of things that keep eyes healthy.

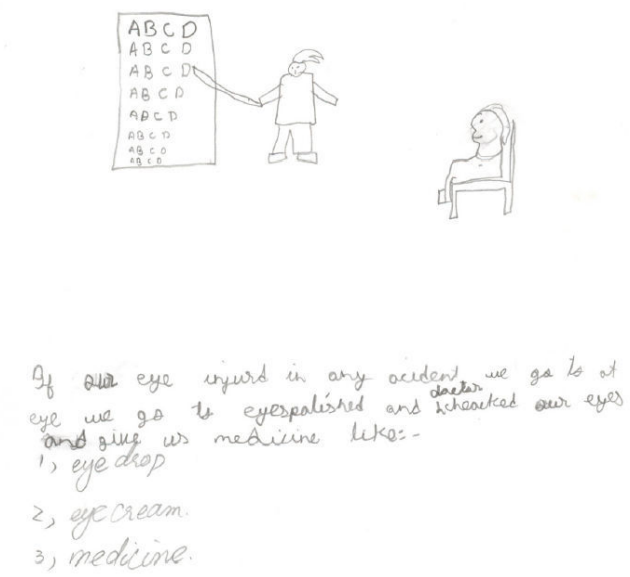


Fig.10. Drawing by a boy from the private school of action to take in case of an eye injury

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