

## Original Research Article

# Assessment and intervention of a health education programme regarding medicine among school children

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## ABSTRACT

**Background:** The current study was aimed to assess knowledge, attitude and practice about medicines among school children of age group 12-16 years.

**Methods:** This was an educational interventional study. The children's attending private/ tertiary school, at Bagalkot were interviewed individually with a pre-tested self-administered questionnaire.

**Results:** In basal assessment, the mean knowledge, attitude and practice scores were found to be  $9.11 \pm 0.11$ ,  $5.72 \pm 0.83$  and  $6.92 \pm 0.05$  respectively. However, there was significant difference ( $p=0.0001$ ) between pre and post study of knowledge, attitude and practice towards medicine.

**Conclusions:** Study concluded that children have limited knowledge about medicine and some negative attitude towards medicine which was improved after educational interventional study. This type of study will help to improve their insight towards medicine in school children.

**Keywords:** Attitude, Bagalkot, Children, Knowledge, Practice, School

## INTRODUCTION

Medicines are one of the most important tools for improving and maintaining health, and they can save lives.<sup>1</sup> The opinions of chronically ill children toward medications have been extensively researched, whereas the perspectives of healthy children have been addressed less frequently. However, to tailor health education messages regarding medications appropriately, information on healthy children's beliefs and attitudes about medicine use is essential.<sup>2</sup> Adolescence is an important time to address medication beliefs because many of these concepts can persist into adulthood, affecting adherence and willingness to continue taking a prescription.<sup>3</sup> Self-medication is a very regular occurrence. A basic understanding of medications is

essential to utilize them properly.<sup>4</sup> Being sick is one of the most common challenges that people confront throughout their lives, and as a result, people are frequently exposed to drugs to treat their ailments. In the lives of children, medicines play a vital role. School children take an active role in the administration of medications, and they regard themselves as more independent than their caregivers do. Inadequate information could lead to the misuse of routinely used medications, which could have catastrophic consequences. During their formative years, children spend a significant amount of time in schools. However, most school curricula do not incorporate medicine instruction.<sup>5</sup> Children's accidental use of various medicines is owing to the child's belief that he or she is mistaken about medicine. Pink-coloured tablets are easily mistaken for sweets by children. As a result, drug

safety in youngsters must be a top priority. Furthermore, both prescribing and self-medication of medications has become a common practice for children.

To clarify misconceptions and improve students' medication practices, educational activities are necessary.<sup>6</sup>

It is critical to teach children about medicines in school so that they acquire accurate and comprehensive information about medicine. Children will be prepared to become sensible drug users when they get older as a result of this drug education, and they will also be expected to be agents of change in their families' drug usage.

## METHODS

It was an education interventional prospective study conducted among school children of BVVS High School Bagalkote, Karnataka for a period of 6 months from September 2019 to February 2020. Children's above 12 years of age either of gender are included for the study and children's with age  $\leq 12$  years and who were absent are excluded for the study. Children were interviewed individually with a pre-tested structured data and self-administered questionnaire. The data collection form was divided into three parts to assess students' knowledge, attitude and practice towards medicine. The data collection forms include socio- demographic information such as name, gender, age.

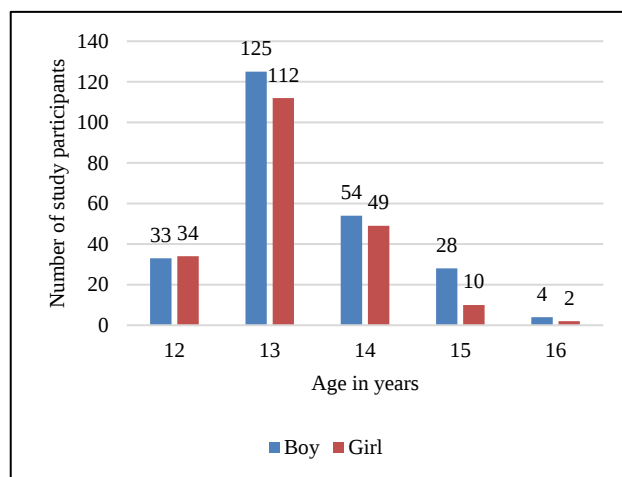
### Procedure

Initially baseline assessment of knowledge, attitude and practice towards medicine was assessed among the study participants using self-administered questionnaire. In knowledge section, 18 items were used for assessing and for each correct answer the score given was 1 and for wrong answer score given was 0. Responses were summed up and score 0-6 were considered as poor knowledge, 7-12 as average and 13-18 as good knowledge. In attitude section, 10 items were used for assessing, for each correct answer the score given was 1 and for each wrong answer score given was 0, response scores were summed up and score 0-5 are considered as negative attitude and 6-10 as positive attitude. In practice section, 12 items were used for assessing, for each correct answer the score given was 2, for each wrong answer the score given was 0 and for every neutral response score given was 1. Scores were summed up and score 0-8 are considered as poor practice, 9-16 as average practice and 17-24 as good practice. After 2 months of initial collection, educational intervention was provided to the study participants using leaflet and pictogram. After 2 months of education intervention, again questionnaire were given to same participants and data was collected and analyzed. Ethical approval was obtained from the Institutional Ethics Committee (HSKCOP/19/15). Descriptive statistics means and percentage wherever necessary were applied. The various factors and their

association with knowledge, attitude and practice towards medicine were studied using Chi-square test.

## RESULTS

The study included a total of 451 subjects were enrolled in the study, out of 451 participants majority of the study participants were 13 years 52.5% and 14 years were 22.8% and 12 years were 14.9% and 15 years were 8.4% and 16 years were 1.3%. Out of 451 participants majority of the study participants were boys (54.1%) and girls were 45.9% summarized in Figure 1.



**Figure 1: Distribution of study subjects according to age in years and gender.**

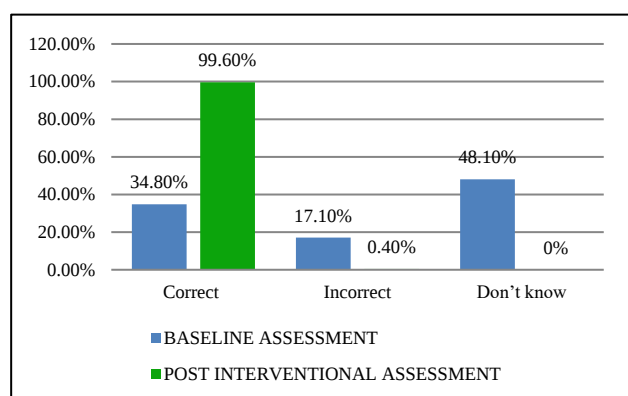
**Table 1: Knowledge assessment of study subjects regarding source of drug information.**

| Question                            | Response         | Baseline assessment (%) | Post intervention assessment (%) |
|-------------------------------------|------------------|-------------------------|----------------------------------|
| Who should suggest to take medicine | Physician        | 71.8                    | 99.6                             |
|                                     | Pharmacist       | 2.4                     | 0.4                              |
|                                     | Nurse            | 4.4                     | 0                                |
|                                     | Depend on my own | 7.5                     | 0                                |
|                                     | Friends          | 0.7                     | 0                                |
|                                     | Parents          | 13.1                    | 0                                |

Out of 451 participants a majority of them considered medicines used for curing illness (53.0 2%), or as take a pill when someone gets sick (6.7%) or as relieving pain (14.0%) or as to make people healthy (11%). A small proportion around (3.3%) considered as they don't know about drugs in baseline assessment. After educational intervention, majority of them considered medicines used for curing illness (97.6%), or as take a pill when someone gets sick get down to (0%) or as relieving pain gets down to (0%) or as to make people healthy came down to (2.4%). A small proportion around (3.3%) considered as they don't know about drugs became (0%).

Out of 451 participants a majority of them considered that they don't know about prescription (64.1) and only (35.9%) said they know about prescription in baseline assessment. After educational intervention, majority of them considered as they know about prescription increased from (35.9) to (99.8%) and only small proportion (0.2%) told they don't know about prescription.

Table 1 depicts the knowledge assessment of study subjects regarding the source of drug information. Out of 451 participants a majority considered that physician should suggest to take medicine (71.8%) or as parents should suggest to take medicine (13.1%) or as depend upon my own (7.5%) or as pharmacist should suggest to take medicine (2.4%) or as nurse should suggest to take medicine (4.4%) After educational intervention, majority considered that physician should suggest to take medicine (99.6%) and parents, nurse, pharmacist, and depend upon own suggestion to take medicines decreased down to (0%).



**Figure 2: Bar chart showing knowledge assessment of study subjects regarding the overuse of paracetamol.**

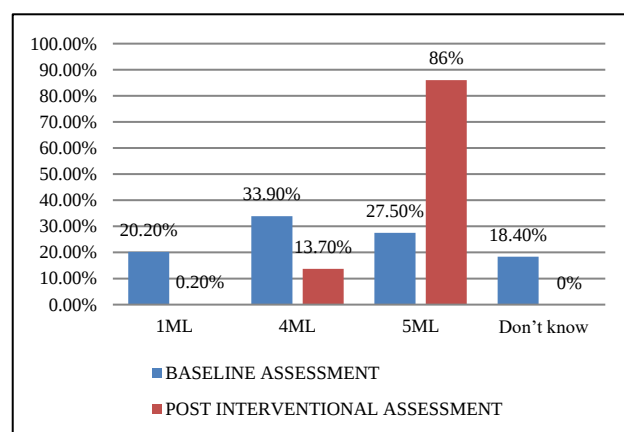
**Table 2: Knowledge assessment of medicine to its efficacy and colour.**

| Question                                | Response              | Baseline assessment (%) | Post intervention assessment (%) |
|-----------------------------------------|-----------------------|-------------------------|----------------------------------|
| Does medicine taste affect its efficacy | Yes                   | 28.6                    | 4.2                              |
|                                         | No                    | 35.0                    | 95.8                             |
|                                         | Don't know            | 36.4                    | 0                                |
| Colour of medicine affect the reaction  | Yes                   | 8.9                     | 5.5                              |
|                                         | Sometimes             | 34.1                    | 4.4                              |
|                                         | No relation to colour | 57.0                    | 90.0                             |

Figure 2 depicts the knowledge assessment of study subjects regarding overuse of paracetamol toxicity. Out of 451 participants a majority of them considered as they don't know about causing liver toxicity by over using paracetamol (48.1%) and they know about liver toxicity

by over use of paracetamol (17.1%) or as they said paracetamol will not cause liver toxicity (17.1%) in base line assessment. After educational intervention, most study participants got know there will be liver toxicity by overuse of paracetamol.

Table 2 shows the knowledge assessment of study subjects regarding medicine to color and its efficacy. It was observed that in baseline assessment, out of 451 participants study subjects said colour of medicine effect the reaction was (8.9%) and colour of medicine sometimes effect the reaction was (34.1%) or as there is no relation to colour and reaction was (57.0%). After the post intervention, study subjects said there is no relation to the colour. It was observed that in baseline intervention, out of 451 participants 36.4% of the study subjects don't know about medicine taste affect its efficacy, 28.6% of the study subjects know about taste will affect its efficacy and 35.0% of the study subjects were said medicine taste will not affect its efficacy. After the post intervention, 95.8% study subjects said medicine taste will not affect its efficacy (Table 2).



**Figure 3: Knowledge assessment of 1 teaspoon in ml.**

It was observed that in baseline assessment, majority considered as 4 ml equals to 1 teaspoon (33.9%) or as 5 ml equals to 1 teaspoon were (27.5%) or as 1 ml equals to 1 teaspoon were (20.2%) or as don't know about 1 teaspoon in ml were (18.4%). After the post intervention, study subject's majority considered as 5 ml equals to 1 teaspoon (86%) shown in Figure 3.

It was observed that in baseline assessment, out of 451 participants 67.0% of the study subjects considered injection form will show better action and 7.5% said that pills will show better action and 8.0% said capsules will show better action and 7.3% said syrup will show better action and 10.25 said there is no relation to form of medicine. After the post intervention, study subjects considered injection form will show better action.

Out of 451 participants a majority of them considered medicines as something positive, a help (66.7%), or as something necessary but evil (27.1%). A small proportion

around 6.2% considered drugs as a danger in baseline assessment. After educational intervention, majority considered medicines as something positive, a help (99.3%) and a proportion of study subjects with a

perception of medicines as necessary evil was decreased from 27.1% to 0.7%. A small proportion (6.2%) who considered medicines are danger was dropped down to 0%.

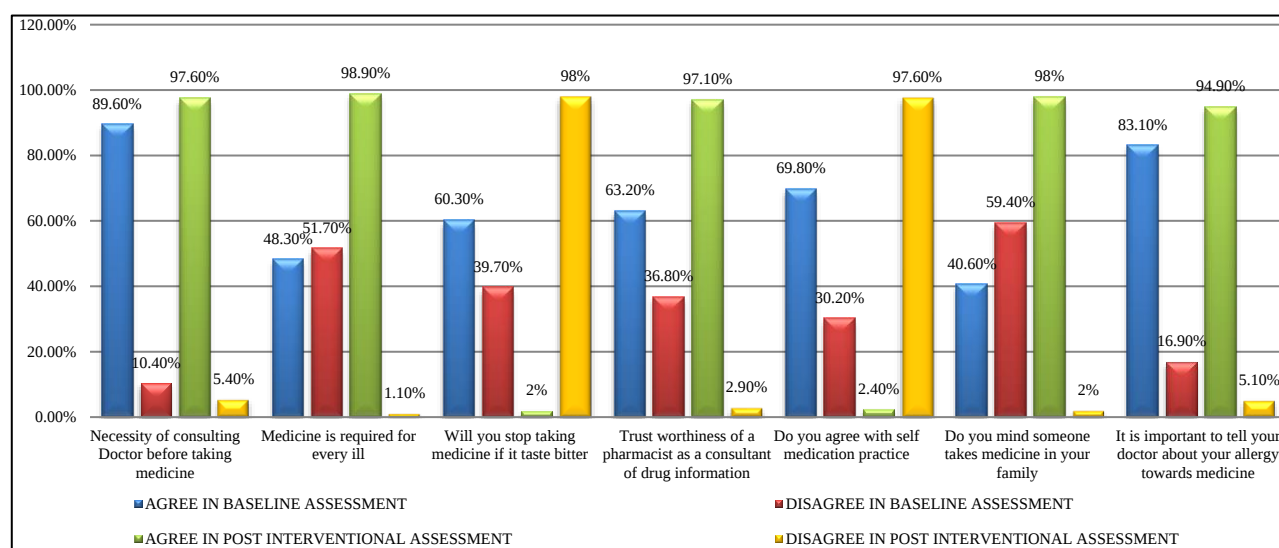


Figure 4: Assessment of attitude towards medicine.

Table 3: Assessment of medicine practice among study subjects.

| Questions                                                                         | Baseline assessment |               |           | Post intervention assessment |               |           |
|-----------------------------------------------------------------------------------|---------------------|---------------|-----------|------------------------------|---------------|-----------|
|                                                                                   | Always (%)          | Sometimes (%) | Never (%) | Always (%)                   | Sometimes (%) | Never (%) |
| Do you check expiry date before taking medicine?                                  | 6                   | 18.4          | 75.6      | 82.1                         | 16.6          | 1.3       |
| When you have cold, will you ask for medication without prescription in pharmacy? | 21.1                | 47.9          | 31.0      | 2.7                          | 77.6          | 19.7      |
| When you visit your physicians, will you bring all medications you are taking?    | 11.5                | 33.7          | 54.8      | 93.1                         | 6.9           | 0         |
| Do you alter the dose of medications based on your symptoms?                      | 4.7                 | 56.5          | 38.8      | 5.3                          | 47.5          | 47.2      |
| Do you complete full duration of treatment?                                       | 16.9                | 0             | 83.1      | 91.6                         | 8.4           | 0         |
| Did you give your prescription medicine to other?                                 | 10.6                | 52.3          | 37        | 0                            | 36.4          | 63.6      |
| Will you combine Traditional medicine when you take western medicine              | 8.2                 | 52.5          | 39.2      | 1.1                          | 25.3          | 86.0      |
| Will you try medicines according to your friend's suggestion?                     | 4.7                 | 56.5          | 38.8      | 0                            | 45.9          | 54.1      |

Figure 4 explains assessment of attitude towards medications among study subjects. In baseline assessment it was observed that out of 451 study participants 43.0% of the study subjects had a positive attitude towards medication, whereas 57.0% of study subjects had a negative attitude. Change in the attitude of the study subjects towards medication after educational intervention was found to be 43% to 88.7% in positive

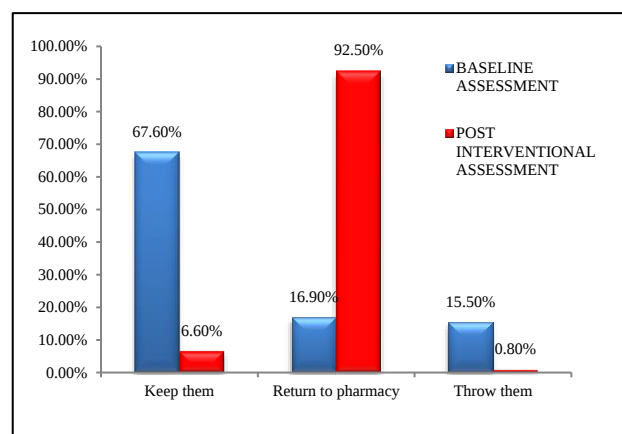
attitude and 57.0% to 11.3 % in negative attitude (Figure 4).

For practice towards medicine, 34.8% were following good medication practice, 56.3% fall under the category of average practice while rest of them (8.86%) had poor practice in baseline assessment. After educational intervention, proportion of study subjects under good medication practice was increased from 34.8% to 96.2%

and study subjects with average practice decreased from 56.3% to 3.8% and poor practice was declined to 0%. In practice assessment described in Table 3, only 6% of the study subjects had the practice of always checking the expiry dates of the medicines before using them and where as 75.6% were not. 21.1% of study subjects always seek for non-prescription medicines from pharmacy when they have cold and 47.9% of study subjects seek for non-prescription medicines occasionally. 31% do not seek for non-prescription medicines from pharmacy. Only 11.5% of study subjects always carry all their currently taking medications while consulting a physician. The respondent's practice of altering the doses of medications based on symptoms without asking doctor was found unsatisfactory, 175 (38.8%) subjects never altered their dose of medication without doctor's advice. Only 16.9% of study subjects always completed the course of treatment as per doctor's advice. Study subjects state that about 37% of them do not share their prescription medications with others and 39.2% of the respondents never combine traditional medicines when they take western medicine. The respondent's practice of trying medicines according to their friend's suggestion was found unsatisfactory only 38.8% of study subjects never tried medicines according to their friend's suggestion and 56.5% sometimes tried according to friend's suggestion. 4.7% were always taking medications according to friend's suggestion (Table 3).

Figure 5 shows the distribution of study subjects according to how they deal with left-over medicines. Most of the respondents (15.5%) were throwing the expired/unused medicines into the thrash, 67.6% of the study subjects kept the unused/expired medicines at home and slim majority 16.9% of the subjects were returning medicines back to pharmacy in baseline assessment.

Educational intervention created an impact on the study subjects thereby decreasing proportion of the study subjects who discarded expired/unused medicines into the thrash from 15.5% to 0.8%. Majority of the study subjects (92.5%) returned medicines to pharmacy and 6.6% kept the unused/expired medicines at home.



**Figure 5: Assessment of practice towards medicine with left over medicine.**

Table 4 explains the comparison of mean score of knowledge, attitude and practice towards medicine using paired t test. In basal assessment, the mean KAP scores were found to be  $9.11 \pm 0.11$ ,  $5.725 \pm 0.083$ , and  $6.92 \pm 0.08$ . As a result of an effective health educational intervention, there was a remarkable increase in KAP scores. The mean KAP scores were improved to  $17.19 \pm 0.085$ ,  $9.46 \pm 1.37$ , and  $9.104 \pm 0.10$ . Mean scores of KAP in basal and endpoint assessment were compared using paired t-test. p value 0.0001 shows that the study was highly significant (Table 4).

**Table 4: Comparison of mean score of knowledge, attitude and practice towards medicine at baseline and post interventional study.**

|                                 | Baseline knowledge score | Post intervention knowledge score | Baseline attitude score | Post intervention attitude score | Baseline practice score | Post intervention practice score |
|---------------------------------|--------------------------|-----------------------------------|-------------------------|----------------------------------|-------------------------|----------------------------------|
| <b>Mean±SEM</b>                 | 9.11±0.11                | 17.19±0.085                       | 5.725±0.083             | 9.46±1.37                        | 6.92±0.08               | 9.104±0.10                       |
| <b>Mean change in the score</b> | 7.798                    |                                   | 2.39                    |                                  | 4.09                    |                                  |
| <b>t value</b>                  | 56.3                     |                                   | 22.29                   |                                  | 28.54                   |                                  |
| <b>P value</b>                  | <0.0001***               |                                   | <0.0001***              |                                  | <0.0001***              |                                  |

## DISCUSSION

Children are required to have an active role. But on the other hand, their knowledge and attitudes regarding medicine are still very limited and fragmented children's knowledge about medicine is obtained only from their daily experiences. While it is related to children's attitudes towards medicine, several studies show that children's attitudes are generally negative towards medicine such as the fear of taking medication, not

adhering to taking medication or even taking excessive medication because of the sweetness of the drug syrup. But in several other studies, children also showed positive attitudes to medicine.

Based on the above, it is very important to teach children about medicines at school so that children can receive correct and complete information about medicine. With this drug education, children will be prepared to become rational drug users when they grow up and at the same

time are expected to be agents of change in rational drug use for their families at home.<sup>7</sup>

In the present study, out of 451 subjects, 244 (54.1%) were males and 207 (45.9%) were females. In contrast to the present study, a study done in province of Segovia, in Spain showed that out of 152 study subjects 73 (48.02%) were males and 79 (51.9%) females.<sup>8</sup> This could be attributed to different study setting and sample size and the availability during data collection in the study area.

Out of 451 subjects, the maximum study subjects was in the age group of 13 years, 237 (52.5%) and the least number of subjects were in the age group of 16 years, 6 (1.3%). A similar finding was seen in study done in province of Segovia, in Spain which showed that out of 152 children, majority of study subjects belong to age group 13 years 61 (40.1%).<sup>9</sup> This could be attributed to different study setting and sample size and the availability during data collection in the study area.

In the present study, out of 451 study subjects, 13.3% were having good knowledge, 78.9% had an average knowledge and 7.8% had poor knowledge. Results indicated that 53.2% of the students were familiar with the term medicines. A study by Thanoon et al shows that the majority of children (86.1%) knew that medicines are useful for curing their illnesses.<sup>10</sup> Majority of the students unaware about vaccines. Only (27.1%) know about vaccine. Similar result was revealed in another study done in Patiala, Punjab revealed that 31.4% children were familiar with vaccine.<sup>11</sup> Majority (64.1%) were not having any idea about the prescription. Whereas only (35.9%) were known about prescription. 71.8% of students were following the physician suggestion to take medicine. Majority of the participants 217 (48.1%) were unaware about liver toxicity caused by overuse of paracetamol, only 157 (34.8%) respondents answered correctly about the effect of over dosage of paracetamol. Similarly, ninety-nine per cent (n=577) of students from the UK and 94% (n=534) of those from the USA answered that paracetamol in sufficient quantities could 'harm'.<sup>12</sup>

In our study 7.5% of students answered that pill form of medicine shows better therapeutic action, 8% of students answered as capsule, 7.3% students answered as syrup, 67% students answered as injection, and 10.2% of the students have answered as there is no relation to the dosage form and its action. A similar finding was seen in a study done in Saudi school students, out of 1022 students. Results indicated that only 158 (15.5%) of the students were familiar with the term medicines, and 157 (15.4%) of them knew medicines uses. Regarding the relationship between the different dosage forms and efficacy; 319 (31.2%) of the students thought that medicine's taste affects its efficacy, while 461 (45.1%) of them thought that the tablet size does the same, and 161 (15.8%) of the students thought large tablets are the most efficient ones. A total of 213 (20.8%) participants

believed that the capsule is the most efficient unit dosage form. A total of 185 (18.1%) students thought that medicine's colour affects its efficacy, 80 (7.8%) and 65 (6.4%) of them had attributed the greater effectiveness of drugs to the red and white colours, respectively. A study by Izzam et al regarding the colour of medicines, only 57.3% (n=482) of children answered correctly and they said that the efficacy of medicines is not related to their colours.<sup>12</sup>

In our study, a majority considered drugs as something positive, a help (66.7%), or as something necessary but evil (27.1%). A small proportion around 6.2% considered drugs as a danger. A similar result was observed in a study conducted in Uppsala, which found among the 5,184 who had answered the question on attitudes towards drugs 60.2% had considered drugs something positive, a help; 37.6% viewed medications as necessary but evil; and 2.2% considered medications as something negative, a danger.<sup>13</sup> In our study it was observed that, 43% of the study subjects had a positive attitude towards medication, whereas 57% of study subjects had a negative attitude.

Limitation of this study was children who were absent due to illness are couldn't enrol for the studies.

## CONCLUSION

This study concluded that, base level (pre intervention) knowledge, attitude and practice was significantly improved after the post educational intervention among school children.

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