## **Original Research Article**

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# Compliance to albendazole therapy under national deworming day programme at schools in Goa: a questionnaire survey

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## **ABSTRACT**

Background: Ministry of Health and Family Welfare, Government of India observed National Deworming Day (NDD) on February 10, 2016 and second round on August 10, 2016 in all 36 States/UTs of the country. The same initiative was implemented in the state of Goa; the present study was aimed at evaluating this initiative. The objectives of the study were to find the compliance of school children to albendazole tablets and also to find any side effects encountered by the students.

Methods: A cross-sectional study was conducted in month of Ocober 2016 amongst total of 266 parents completed a self-administered questionnaire. The Data retrieved from completed questionnaires was entered in EpiDATA and analysed by SPSS version 23.

Results: Of the total 65.8% of students received albendazole tablets. The overall compliance to the albendazole was 61.3%. Only 4.1% of students developed minor adverse reactions. Overall 78.9% of the parents were willing to participate in the next round of NDD.

Conclusions: The compliance to the albendazole was less than expected. There is a greater need to involve parents and teachers to improve the compliance of students towards albendazole to achieve desired outcomes.

**Keywords:** National deworming day, Compliance to albendazole, School children, Goa

### INTRODUCTION

As per the World Health Organization (WHO), estimated 1.5 billion people, or 24% of the global population, are infected with soil-transmitted helminth infections worldwide. WHO also estimates that over 270 million pre-school age children and over 600 million school-age children live in areas where these parasites are intensively transmitted, and are in need of treatment and preventive interventions. In 2015, 27 countries have reached the World Health Assembly's target of treating at least 75% of school-aged children for the disease.<sup>2</sup> Poor sanitation and hygienic conditions are the main causes of these parasitic infections and children are easily affected due to frequent contact with the infected soil. The chronic worm infestation results in consequences such as anaemia and under-nutrition leading to impaired mental and physical development. Under-nutrition and anaemia among children is well documented in India: almost 58.4% children in the 6-59 months age-group are anaemic, with even higher rates of anaemia in rural areas.<sup>3</sup>

Heavy worm load causes the child to be sicker and reduces capacity to concentrate on the academics, at times may lead to chronic absenteeism at the school. Subsequently the earning capacity of these children in future life is considerably affected. In areas with parasitic worm infestations are endemic, administering safe, effective deworming drugs to children at schools is an excellent strategy due to its impact on educational and

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economic outcomes and low cost. The evidence shows that mass deworming leads to significant improvement in outcomes related to education, career choice, earnings, and long-term well-being. Rigorous research has shown significant gains from school-based deworming programs on children's health, access to education and livelihoods. Schools provide an ideal setting in which to control these diseases and in this age group.<sup>4</sup>

In 2009, the Government of India recommended States/UTs to conduct mass deworming based on Statespecific STH prevalence. In one study from south India showed, prevalence of STH was 7.8 per cent, varying widely in schools from 0 to 20.4%, in 3706 screened children.<sup>5</sup> In another from Uttarakhand, reported a prevalence of hookworm 9 (2.75%) and A. lumbricoides 5 (1.53%).<sup>6</sup> The STH prevalence for Goa is 42.4%.<sup>7</sup> The school and Anganwadi-based deworming program approach for mass deworming provides an easy way to reach large numbers of target-age group children, through existing infrastructure rather than creating new channels of distribution.

In February 2015, the Ministry of Health and Family Welfare (MoHFW), Government of India launched the National Deworming Day (NDD) as part of National Health Mission in 11 states/UT, including Assam, Bihar, Chhattisgarh, Dadra and Nagar Haveli, Haryana, Karnataka, Maharashtra, Madhya Pradesh, Rajasthan, Tamil Nadu, and Tripura. The objective of NDD is to deworm all preschool and school-age children between the ages of 1-19 years through the platform of schools and Anganwadi centres in order to improve their overall health, nutritional status, access to education and quality of life. The NDD has emerged as the world largest public health campaign for treatment of intestinal parasitic worms. After the unprecedented coverage of NDD with national level coverage of 89 million children, the MoHFW mandated the observation of the NDD at pan-India level from February 2016.8 The WHO report on the national coverage was very encouraging.9

With an aim to intensify efforts towards STH control among children in India, the Ministry of Health and Family Welfare, Government of India has decided to observe NDD on February 10, 2016 and second round on August 10, 2016 in all 36 States/ UTs of the country. The NDD will be followed by a mop-up day (MUD) on February 15, 2016 and August 17, 2016 with the intent of deworming children who missed the dose on February 10 and August, 10. The number of children targeted on National Deworming Day in India was 26,98,37,021 during 2016.8 All schools and Anganwadi centres will be the implementation sites of NDD across the country. 10 The same initiative was implemented in the state of Goa, the present study was aimed at evaluating this initiative. The objectives of the study were: i) To find the compliance of school children to albendazole tablets. ii) To find any side effects encountered by the students.

#### **METHODS**

A cross-sectional study design was employed to assess the compliance to albendazole dispensed to school children under National Deworming Day (NDD) programme. This is a questionnaire based study. Two schools were randomly selected from total of ten schools in the area around the Santa Cruz village. Both the schools have strength of 500 students in the high school section. A universal sampling technique was utilized for the current study. Questionnaires were distributed to 500 students attending two major schools with the instructions get it completed by their respective parents. The questionnaires were printed in simple English as the medium of instruction in these school was English. The school children receiving these questionnaires were requested to handover them to their respective parents. An informed consent form was enclosed along with the questionnaire. The Informed Consent Form was read and signed by parents before they could fill the questionnaire. The study protocol was approved by the Ethics committee of based at Goa Medical College at Bambolim-Goa, India.

A universal sampling strategy was adopted to incorporate as many respondents as possible. A total of 266 parents filled in the questionnaires and returned it to the school. The total sample size was 266 parents who returned completed questionnaires. The study period was from 1<sup>st</sup> October to 31<sup>st</sup> October 2016. The health workers retrieved the completed questionnaires. The data was entered in the EpiDATA software (version 3.1) and data was analysed using SPSS (version 23). Chi squared test and proportion were used and the significance level was fixed to p<0.05.

## **RESULTS**

Out of the total 500 questionnaires distributed, only 266 students returned completed questionnaires (response rate was 53.2%). The following results are based on data of retrieved from 266 questionnaires. Table 1 shows that 65.8% of students received albendazole tablets under the NDD programme. Whereas 27.1% of the parents reported that their ward didn't receive albendazole. The reception of tablets wasn't statistically associated with the gender of the student (p=0.482).

Table 2 shows the compliance of students to the albendazole. The overall compliance to the albendazole was 61.3% and 4.1% didn't consume albendazole despite receiving the tablet. About 7.5% of the parents didn't comment on the compliance although their ward had albendazole tablet with them.

Table 3 shows the development of the adverse reaction among students who consumed albendazole tablets. Only 4.1% of parents reported that their child developed adverse reaction and all the reactions were of mild nature. None of the parents specified the exact type of adverse reaction.

Table 1: Gender wise distribution of students received albendazole tablets.

Gender	Received alber	Total (0/)			
	Yes (%)	No (%)	No response (%)	Not recorded (%)	Total (%)
Male	69 (63.3)	34 (31.2)	0 (0.0)	6 (5.5)	109 (100.0)
Female	106 (67.5)	38 (24.2)	1 (0.6)	12 (7.6)	157 (100.0)
Total	175 (65.8)	72 (27.1)	1 (0.4)	18 (6.8)	266 (100.0)

Pearson Chi-Square = 2.464, df=3, p=0.482

Table 2: Gender wise distribution of student's compliance to albendazole.

Gender	Compliance to	Total (0/)			
	Yes (%)	No (%)	Not applicable (%)	Not recorded (%)	Total (%)
Male	65 (59.6)	4 (3.7)	35 (32.1)	5 (4.6)	109 (100.0)
Female	98 (62.4)	7 (4.5)	37 (23.6)	15 (9.6)	157 (100.0)
Total	163 (61.3)	11 (4.1)	72 (27.1)	20 (7.5)	266 (100.0)

Pearson Chi-Square = 4.024, df=3, p=0.259.

Table 3: Development of adverse reaction.

Consumed	Developed ad	Total (0/)			
albendazole	Yes (%)	No (%)	Not applicable (%)	Not recorded (%)	Total (%)
Yes	11 (6.7)	147 (90.2)	00	5 (3.1)	163 (100.0)
No	00	3 (27.3)	8 (72.7)	00	11 (100.0)
Not applicable	00	00	72 (100.0)	00	72 (100.0)
Not recorded	00	00	5 (25.0)	15 (75.0)	20 (100.0)
Total	11 (4.1)	150 (56.4)	85 (32.0)	20 (7.5)	266 (100.0)

Pearson chi-square=387.95; df=9; p=0.000.

Table 4: Willingness to participate in the next NDD.

Consumed albendazole	Willing to participa	Total (0/)		
Consumed albendazoie	Yes (%)	No (%)	Not recorded (%)	Total (%)
Yes	144 (88.3)	10 (6.2)	9 (5.5)	163 (100.0)
No	11 (100.0)	00	00	11 (100.0)
Not applicable	41 (57.0)	24 (33.3)	7 (9.7)	72 (100.0)
Not recorded	14 (70.0)	29 (10.0)	4 (20.0)	20 (100.0)
Total	210 (78.9)	36 (13.5)	20 (7.5)	266 (100.0)

Pearson chi-square=42.481; df=6; p=0.000.

The willingness of parents to participate in the next round of NDD is showed in the Table 4. Overall 78.9% of the parents were willing to participate in the next round of NDD whereas 13.5% were not. Consumption of albendazole tablet was significantly associated with the willingness to participate in the next round (p=0.000).

## **DISCUSSION**

In this study, it is observed that 65.8% of students received albendazole tablets under the NDD programme which ideally should have been at least 75%. Whereas 27.1% of the parents reported that their ward didn't receive albendazole which should have been nil. The objective of NDD programme is to deworm all pre-school and school-age children between the ages of 1-19 years through the platform of schools and Anganwadi centers in order to improve their overall health, nutritional status,

access to education and quality of life. 10,11 A section of students observed to have missed albendazole tablets probably due to their absence during the deworming drive. If such trend continues to exist, then this programme won't be able to achieve desired goal.

The overall compliance to the albendazole was 61.3%. This compliance is very low as compared to the expected compliance of 100% as stipulated under the NDD mandate. Some section of students didn't consume albendazole tablets even after receiving the tablet. There appears to be some sort of unwillingness from the parent's end appears to have resulted in low level of compliance.

Many parents could have been apprehensive about the development of adverse drug reaction. However the issue of development of adverse reaction observed was minor.

Only small group of parents reported minor reaction. No parent reported of very severe form of adverse event and none of the students were ever admitted for the management of adverse drug reaction. The parents were more than willing to participate in the next round of NDD if they were well informed about the programme well in advance. There exists a small section of parents who do not want their child to be dewormed by the school authorities. This research is one of it's the firstkind, on the compliance of albendazole in the school children and the authors to the best of their knowledge couldn't find similar research work done while performing literature search. Therefore, there are no studies quoted for comparison purpose.

#### **CONCLUSION**

Compliance to the albendazole was less than expected although there was very good effort to reach every student. There are no significant side effects to the albendazole even after consumption by a large group of student community.

#### Recommendations

To ensure a very good level of compliance, all students should be ensured that the drug should not be allowed to be taken home for consumption later. The parents should be informed well in advance about the NDD so that the student and parents are well prepared. The teachers should be made more responsible to coordinate between health workers and parents.

## Limitations

Although it was planned to assess the role of the teachers in the implementation of NDD, however the teachers didn't cooperate. Personal face to face interviews of parents would have been an ideal method however due to busy schedule of the parents it wasn't feasible.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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