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Prevalence of Tuberculosis in Children of Selected Slum Areas of Jamnagar City: A Cross-Sectional Survey Study

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ABSTRACT

Background: Childhood Tuberculosis (TB) remains an under‑recognized public health problem in developing countries. Ayurveda emphasizes NidanaParivarjana (avoidance of causative factors) as a key strategy for disease prevention. Understanding contemporary Nidana is therefore essential for effective control of childhood TB.

Objectives: To assess the prevalence of Childhood Tuberculosis among school‑going children in selected slum areas of Jamnagar city and to evaluate associated socio‑demographic, nutritional and lifestyle factors.

Materials and Methods: A cross‑sectional survey was conducted among 1035 children aged 3–16 years from four schools of Jamnagar city. Data regarding age, sex, religion, socioeconomic status, habitat, dietary habits, hygiene, and immunization status and morbidity pattern were collected. Clinical screening was carried out, and suspected cases were referred for confirmation.

Results: Only one child was diagnosed with pulmonary tuberculosis, indicating a prevalence of 0.09%. A majority of children belonged to slum areas (68.50%) and middle or poor socioeconomic strata. Recurrent respiratory tract infections (28.79%) and nutritional deficiencies such as Pandu and Karshya (22.89%) were the most common morbidities.

Conclusion: The prevalence of childhood TB observed in this school‑based survey was low. However, poor socioeconomic conditions, malnutrition, inadequate hygiene and recurrent respiratory infections—important contemporary Nidanawere highly prevalent. Strengthening preventive strategies based on NidanaParivarjana, along with early screening and public health interventions, is essential to reduce childhood TB burden.

Keywords: Childhood Tuberculosis, NidanaPanchaka, Slum population, Survey Study, Ayurveda.

I. INTRODUCTION

According to Ayurveda, disease manifestation is explained through NidanaPanchaka, of which Nidana (etiological factors) plays a pivotal role. AcharyaCharaka has stated that avoidance of causative factors constitutes one‑third of the total treatment. Tuberculosis, comparable to Rajayakshma in Ayurvedic literature, is strongly influenced by factors such as under‑nutrition, overcrowding, poor hygiene and recurrent infections.

Rapid urbanization and migration have resulted in the expansion of urban slums, exposing children to unfavourable living conditions. Childhood TB often remains undetected due to non‑specific symptoms and social stigma, particularly in school‑based populations. Hence, a survey‑based assessment focusing on prevalence and associated Nidana is essential.

II. MATERIALS AND METHODS:

Table-1 Shows list of school for Survey Study:

Sr. No.	Date	School name	Total Children	Detected for Tuberculosis	%
1.	16-25.09.2010	K.B.Mandhu High School, Jamnagar	466	----	00
2	02 - 03.12.2010	Balaknatha School, Nr. Kalavadnaka, Nr.	104	----	00

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		SaibabaMandir, Jamnagar			
3	24 - 27.01.2011	R.R.Shah High School, Opp. Cricket Ground, Nr. Lal Bungalow, Jamnagar	328	**1**	**0.30**
4	03.02.2011	Kumar BediSala School, Bedi, Jamnagar.	137	----	00
Total			**1035**	**1**	**0.09**

A cross-sectional survey study was conducted in four schools of Jamnagar city between September 2010 and February 2011. A total of 1035 children aged 3–16 years were included. Informed consent was obtained from school authorities.

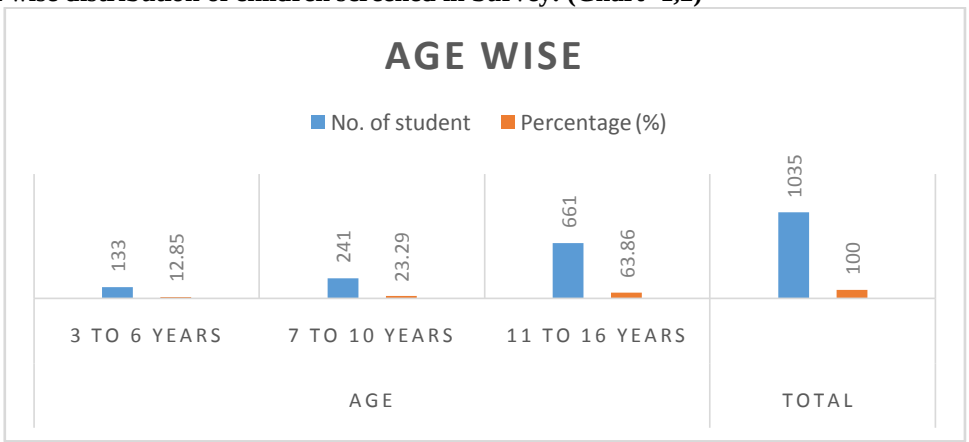
Socio-demographic data, dietary habits, sleep pattern, bowel habits, hygiene practices and source of drinking water were recorded. Anthropometric measurements were taken to assess nutritional status. Immunization history and presence of BCG scar were noted. Children were clinically examined, and those suspected of TB were referred for further diagnostic evaluation.

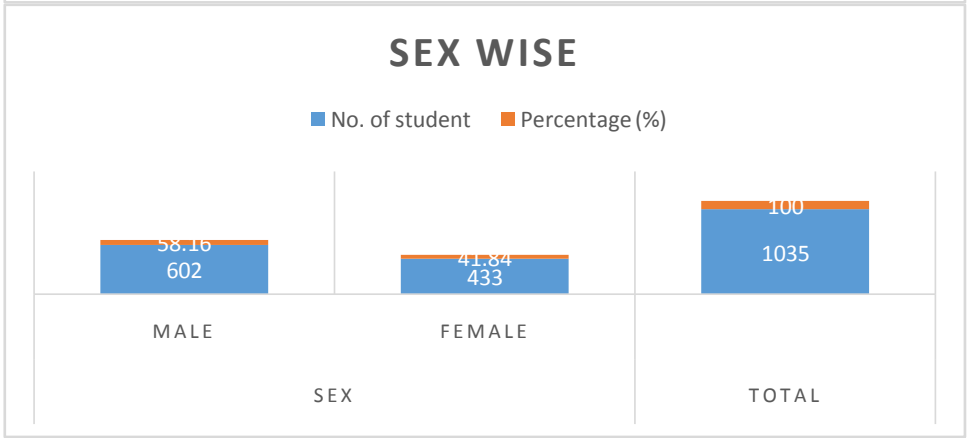
III. RESULTS:

Among the 1035 children screened, the prevalence of pulmonary tuberculosis was 0.09%. The majority of children were aged 11–16 years (63.86%) and males constituted 58.16% of the study population. Most children belonged to slum areas (68.50%).

Nutritional deficiencies (Pandu and Karshya) were observed in 22.89% children, while 28.79% had a history of recurrent respiratory tract infections. Poor to moderate hygiene was noted in nearly 88% of children. Although 80.10% children were properly immunized, 19.90% had incomplete immunization. (See chart no. 01 to 18)

Age & Sex wise distribution of children screened in Survey: (Chart -1,2)





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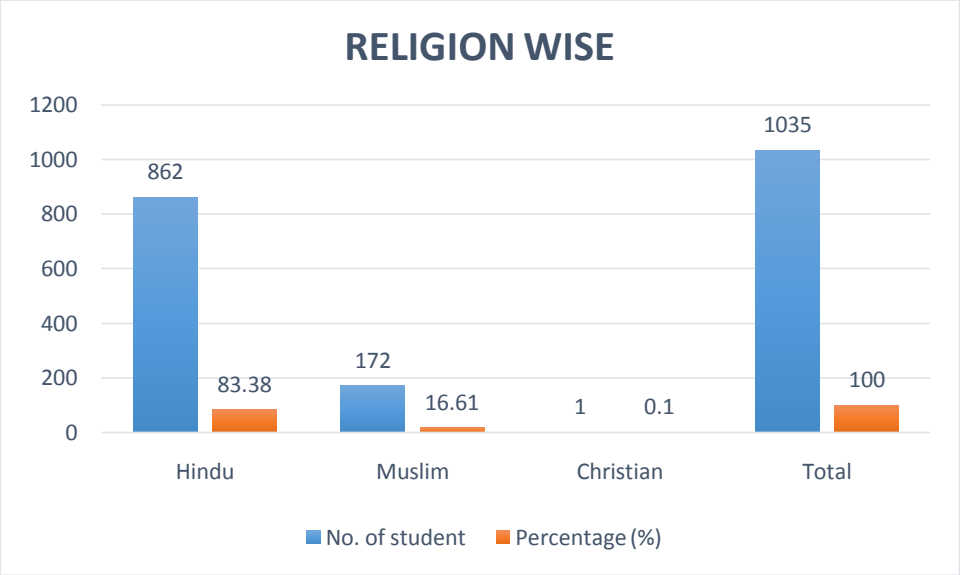
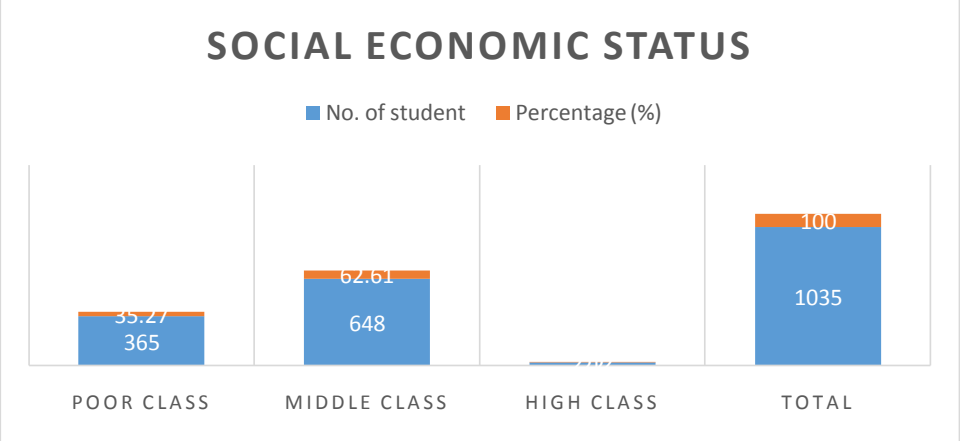
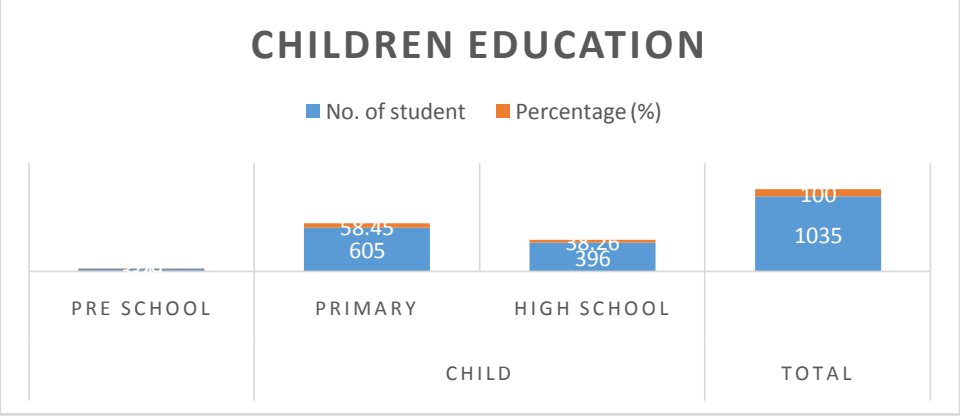
Religion wise distribution of children screened in Survey: Chart -3



Social Education Status wise distribution of children screened in Survey: Chart -4



Education wise distribution of children screened in Survey: Chart – 5, 6, 7.



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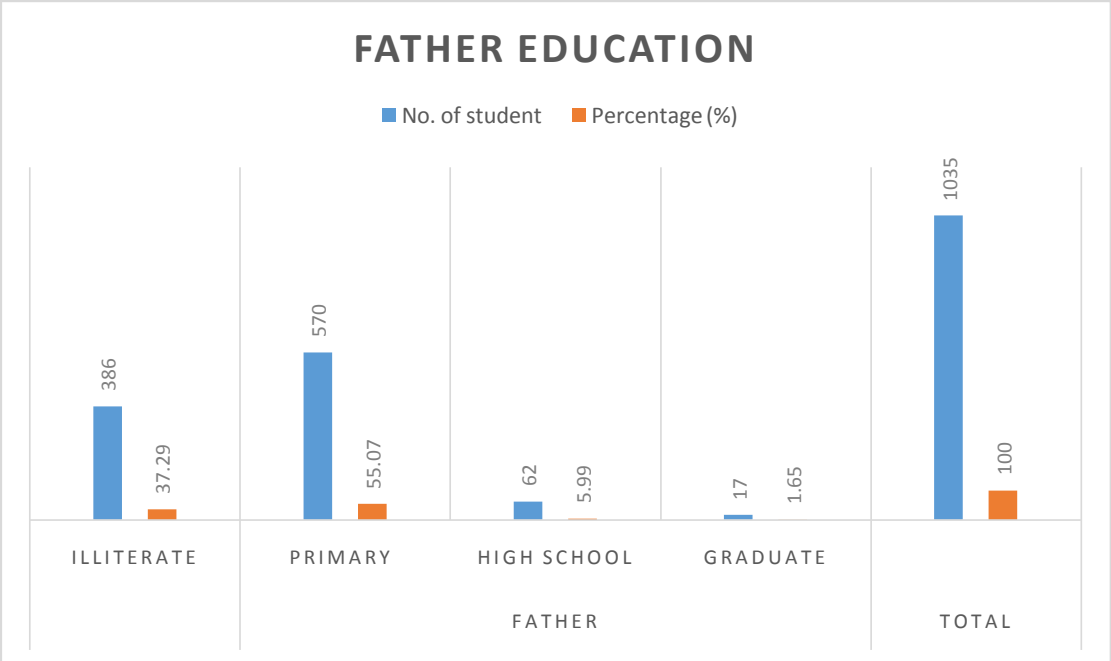

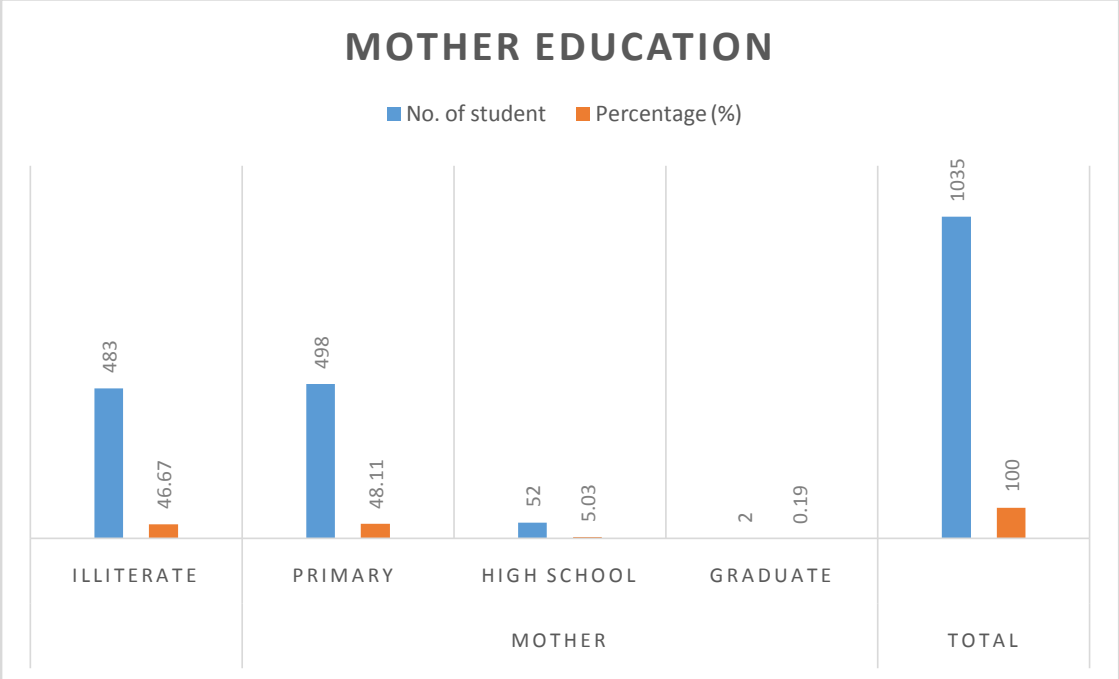

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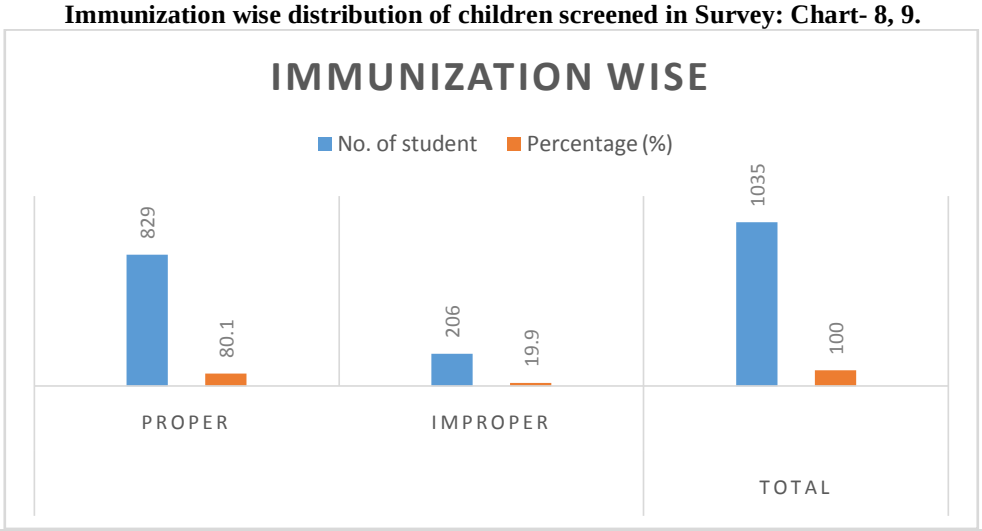
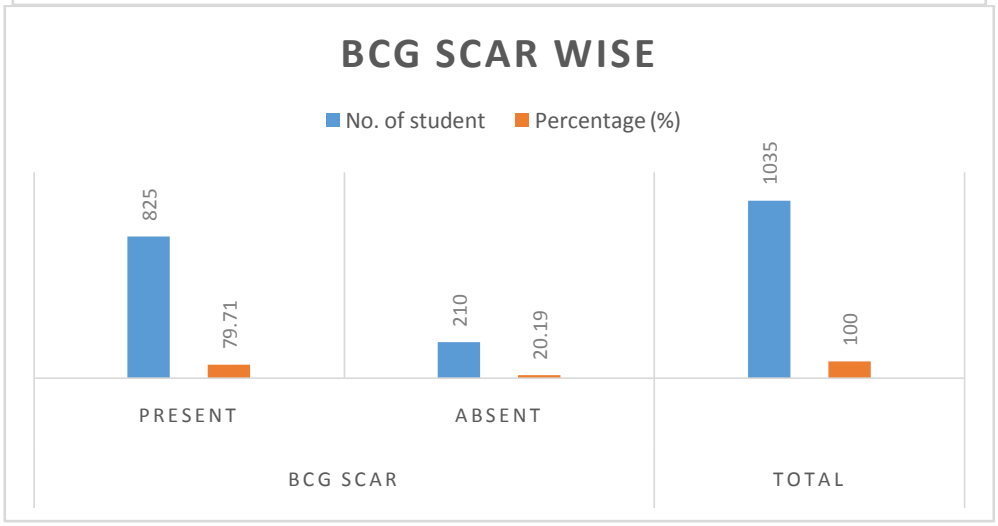
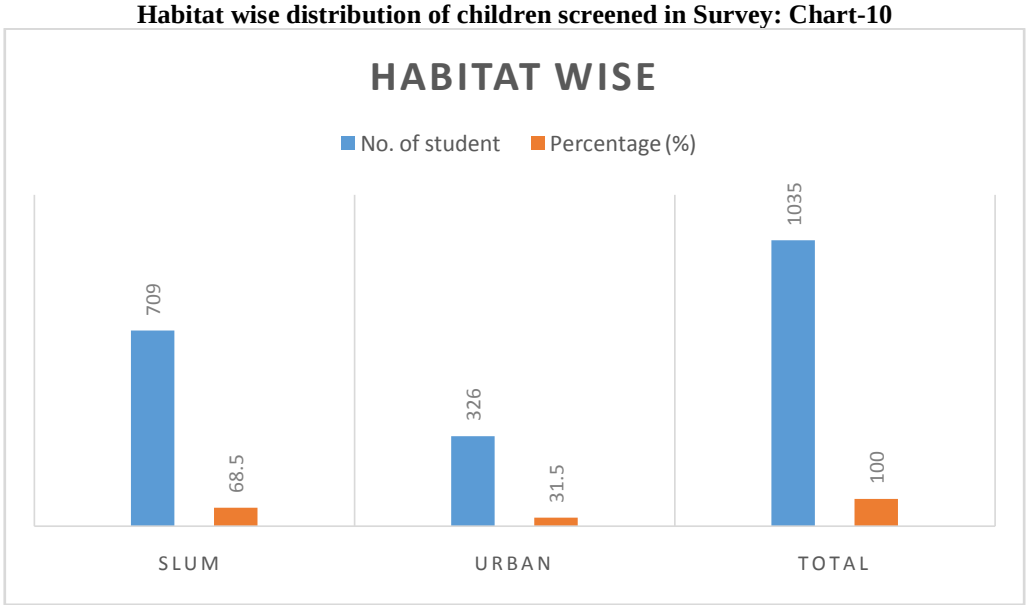
Immunization wise distribution of children screened in Survey: Chart- 8, 9.





Habitat wise distribution of children screened in Survey: Chart-10



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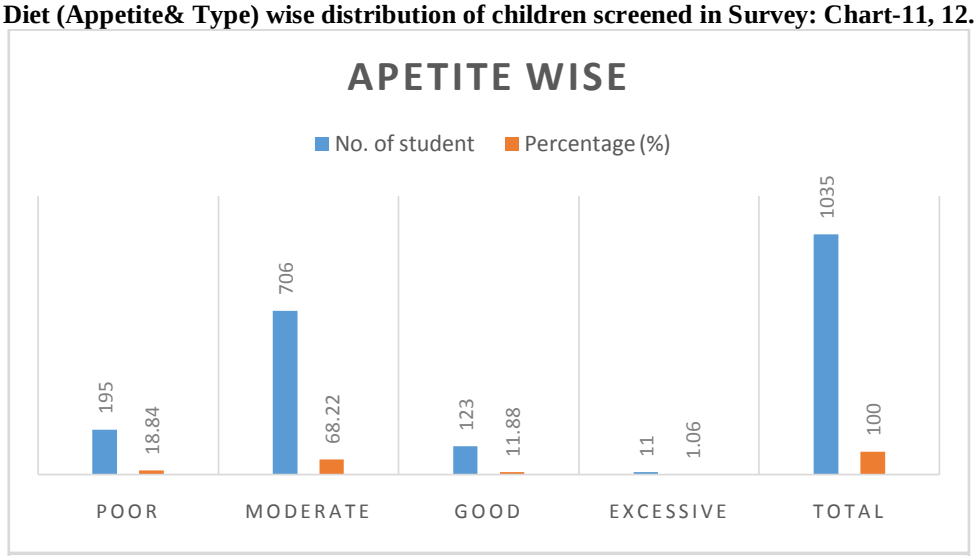
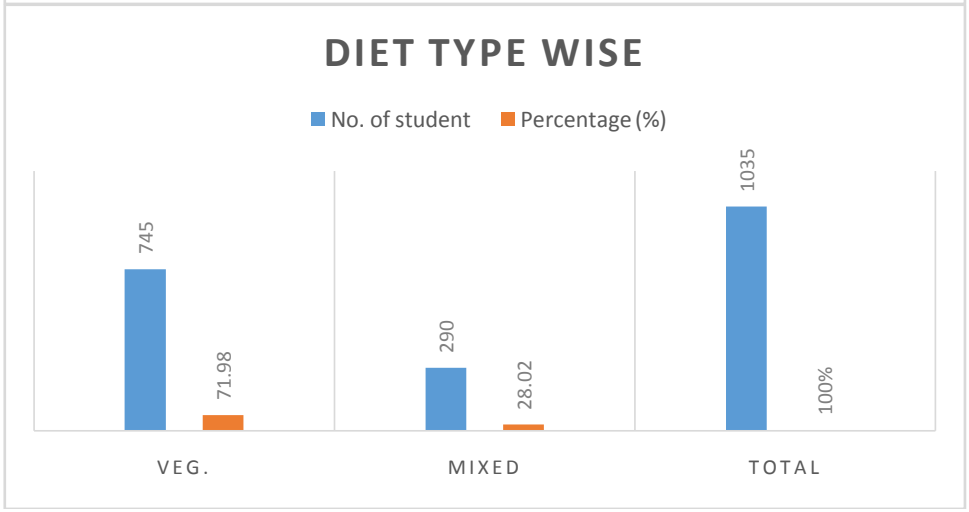
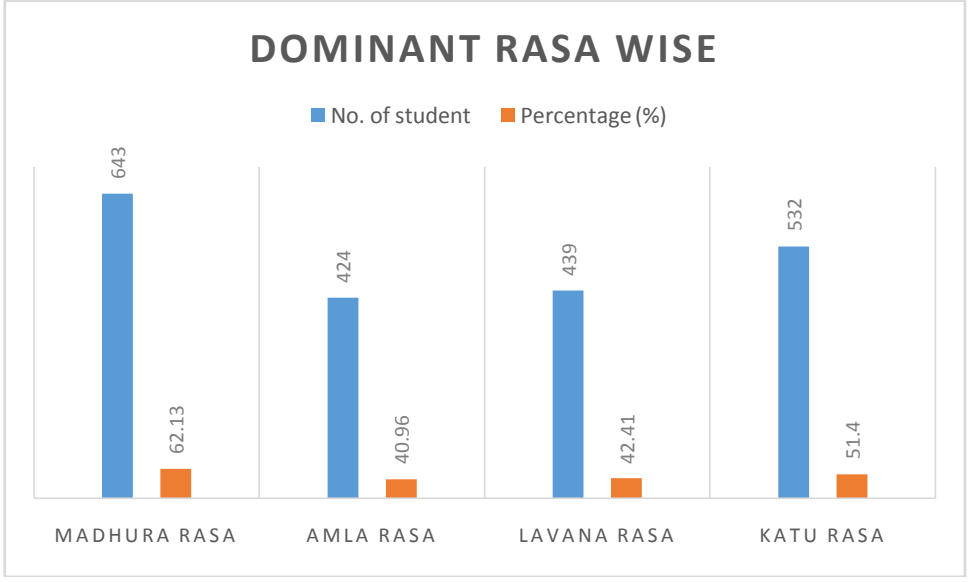
Diet (Appetite& Type) wise distribution of children screened in Survey: Chart-11, 12.





Rasa dominance in food wise distribution of children screened in the Survey: Chart-13.



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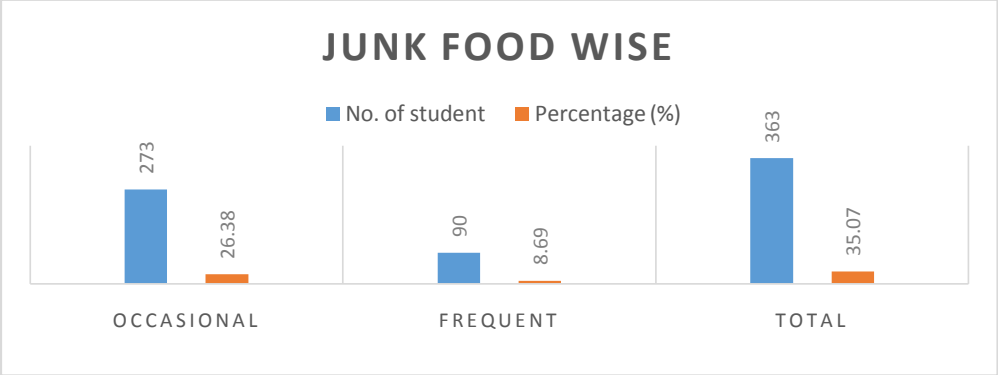
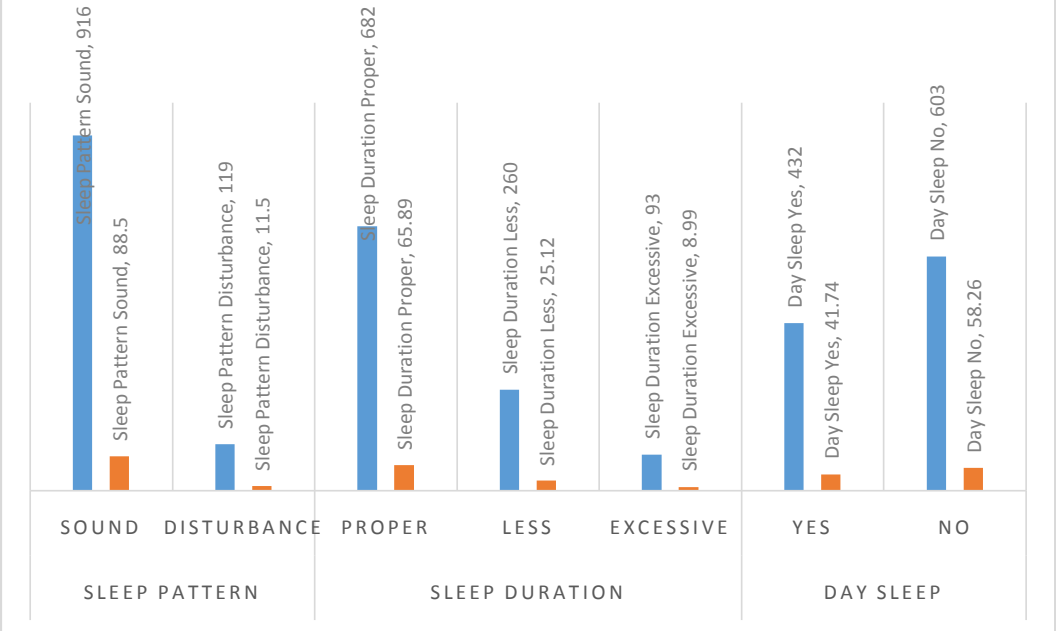
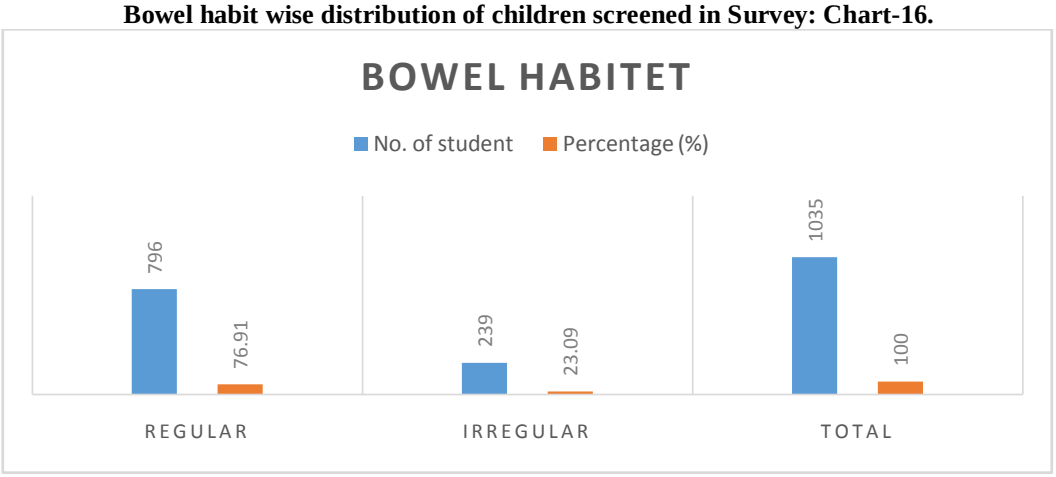
Junk Food wise distribution of children screened in Survey: Chart- 14.



Sleep wise distribution of children screened in Survey: Chart- 15.



Bowel habit wise distribution of children screened in Survey: Chart-16.



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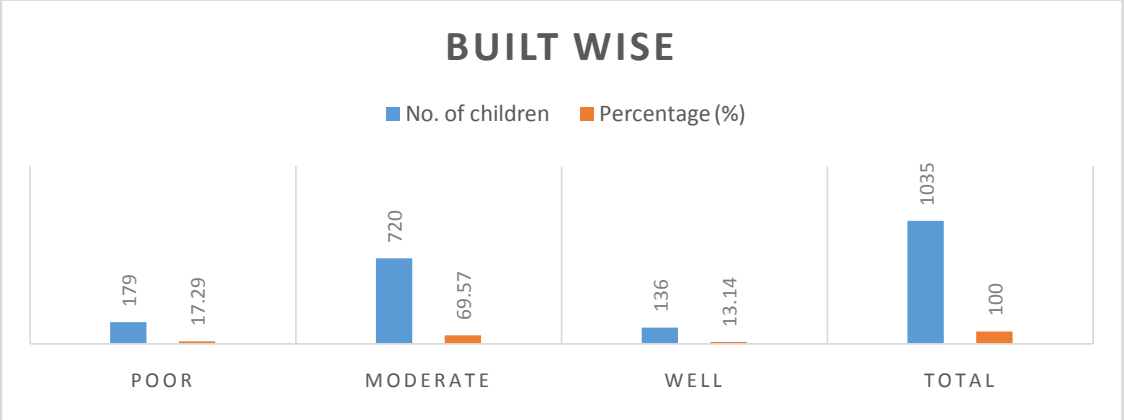
Built wise distribution of children screened in Survey: Chart- 17.



Hygiene wise distribution of children screened in Survey: Chart-18.

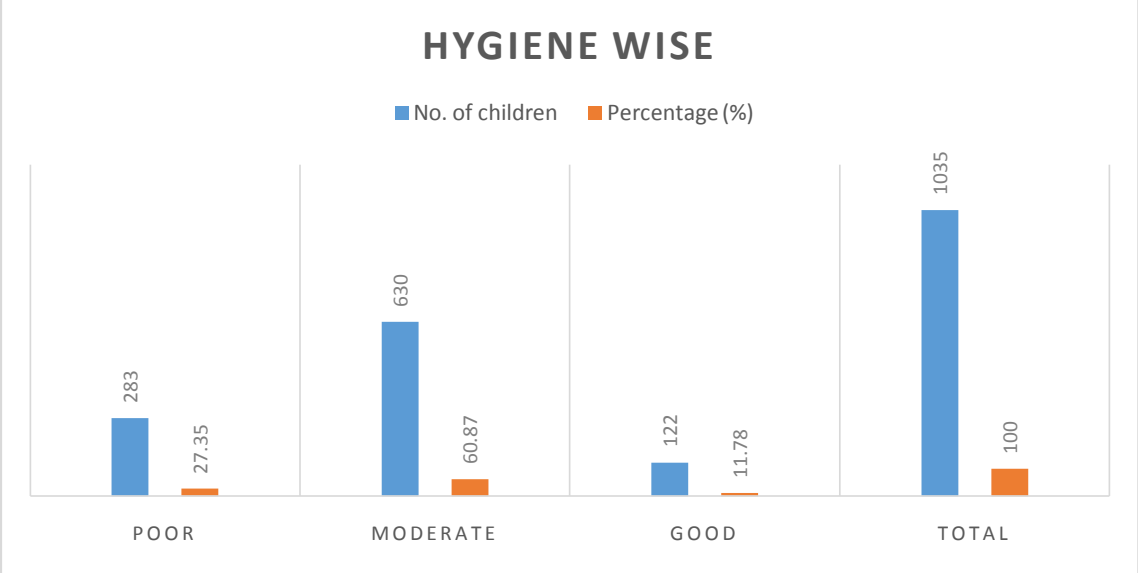


Table- 2 Shows main complaint wise distribution of children screened in Survey:

Sr. No.	Disease	No. of Children	Percentage
1	Rec. Respiratory Problem	298	28.79%
2	Nutritional Deficiencies like- Pandu&Karshya	237	22.89%
3	GI Tract Problem	60	5.79%
4	Krimi	58	5.60%
5.	Skin problem	51	4.93%
6.	Vision Problem	38	3.67%
7.	Pulmonary Tuberculosis	01	0.09%
Total		742	71.88%

In the present survey study, only 0.09% children were suffering from Pulmonary Tuberculosis. Majority of children i.e. 298 (28.79%) were having history of Recurrent Respiratory Tract Infections, 237 (22.89%) children were having Nutritional Deficiencies like-Pandu&Karshya, 60(5.79%) children were having GI Tract Problem, 58(5.60%) children having Krimi (Worm infestation) were also found, 51(4.93%) children were found with skin problems and 38(3.67%) children were having vision problem.

IV. DISCUSSION:

The low prevalence of TB observed in the present study may be attributed to under‑representation of affected children in schools due to illness, stigma and social isolation. Childhood TB is known to be more prevalent in children below five years of age, who are less likely to attend school regularly.

Socioeconomic deprivation, malnutrition, overcrowding and poor hygiene—recognized Nidana for Rajayakshma—were highly prevalent in the surveyed population. These factors weaken immunity and predispose children to recurrent respiratory infections, which may progress to tuberculosis in susceptible individuals. Despite relatively good immunization coverage, gaps remain that necessitate strengthened public health measures.

V. CONCLUSION:

The prevalence of pulmonary tuberculosis among school‑going children in selected slum areas of Jamnagar city was 0.09%. Although TB prevalence was low, a high burden of contributory Nidana such as malnutrition, poor hygiene and recurrent respiratory infections was observed. Addressing these factors through NidanaParivarjana, nutritional support, hygiene education and regular screening is crucial for effective prevention of childhood tuberculosis.

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Conflict of interest: There is no conflict of interest