

# Epidemiological profile of pediatric pilgrim patients coming to Shri Mata Vaishno Devi Yatra in Jammu

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## ABSTRACT


**Background:** Shri Mata Vaishno Devi Shrine is visited by lakhs of devotees from India and abroad every year and the number is swelling every year. Since the inception of Shri Mata Vaishno Devi Shrine Board (1986), the number of pilgrims visiting the temple has increased from 13.96 lakhs in the year 1981–1986 to 78 lakhs in 2017 and is possible only due to very efficient and pilgrim-oriented management of Shrine Board. **Objectives:** The objectives of this study were to study the epidemiological profile of pediatric pilgrim patients coming to Community Health Centre (CHC), Katra, and thereby suggest precautions which should be taken by the pilgrims. **Materials and Methods:** The present cross-sectional study was conducted over a period of 1 year from August 2017 to July 2018, in the Pediatrics Section at CHC, Katra, District Reasi, Director Health Services Jammu, Jammu and Kashmir, India. All pilgrims up to the age of 18 years with any type of recent ailments were included in this study. The detailed sociodemographic details present history and past history were taken and complete physical examination was done. The patients were categorized on the basis of diagnosis and managed as per the protocol. If necessary, patients were referred to higher center for further evaluation and management. **Results:** Of total 14,400 children who came to pediatrics outpatient department of CHC, Katra, 435 were pilgrims from all over India and abroad. Majority 144 (33%) pediatric pilgrim patients were from Uttar Pradesh followed by 98 (22.5%) from Delhi. Birth to 3-year group was the most common group suffering from ailments followed by 3 years to 6 years group. The most common complaints with which these children presented were related to gastrointestinal system and respiratory system. Less common complaints included allergic rash, insect bites, injuries due to fall, abnormal body movements, and monkey bites. **Conclusion:** Children up to 6 years are more prone for illnesses, particularly those <3 years old.

**KEY WORDS:** Pediatric Pilgrims, Mata Vaishno Devi Yatra, Travelers, Diseases

## INTRODUCTION

India has the oldest and continually operating pilgrimage tradition in the entire world. The number of pilgrimage sites

is so big that the entire subcontinent may be regarded as one large and continuous sacred place. Shri Mata Vaishno Devi Shrine, one of the oldest and most popular shrines of India, is located at a height of 5300 feet on the holy Trikuta Hills of the Shivalik Hill Range about 13 Kms from the base camp Katra. This abode of Goddess Durga is visited by lakhs of devotees from all over India and abroad every year. Since the inception of Shri Mata Vaishno Devi Shrine Board (1986), the number of pilgrims visiting the temple has increased from 13.96 lakhs in the year 1981–1986 to 78 lakhs in 2017 and is possible only due to efficient and pilgrim-oriented management of Shrine

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Board. Many people visit Vaishno Devi on yearly and few on monthly basis along with their families including children. A significant proportion of children traveling to Mata Vaishno Devi shrine develops travel and climate-related illnesses. These illnesses have significant impact on children, their families and health-care facilities and majority of them can be avoided by taking few precautions. We present the clinical profile of pediatric pilgrim patients coming to Community Health Centre (CHC), Katra Hospital over a period of 1 year and aimed to evaluate which travel-related risk factors, particular seasons, age groups, and eating and drinking habits were associated with illnesses in these children. To the best of our knowledge, this is the first study focusing on the Vaishno Devi pilgrims in the pediatric age group.

### Aims and Objectives

The aim of this study is to identify the common medical problems of the pediatric pilgrims coming to Mata Vaishno Devi.

### MATERIALS AND METHODS

This cross-sectional study was conducted over a period of 1 year from August 2017 to July 2018, in the Pediatrics Outpatient Department (OPD) Section at Katra Hospital, District Reasi, Director Health Services Jammu, India. The study was started after taking permission from the ethical committee. Katra Hospital is a 30-bedded CHC with all specialties run by the state Government Health Department and is the main hospital of the Katra Town. Most emergency pilgrim cases are brought to this hospital either by the Shrine Board medical team personnel, local people, or relatives and friends. All pilgrims coming to the pediatrics OPD of this hospital up to the age of 18 years with any type of medical ailments were included in this study. Data were collected according to a standardized, anonymous questionnaire. The questionnaire included demographic data regarding age, sex, state and country of residence, socioeconomic status, and major presenting complaints. The detailed present history and past history were taken and complete physical examination done. The patients were categorized on the basis of diagnosis and managed as per the protocol by the pediatrician. If necessary, patients were referred to higher center for further evaluation and management. Patient diagnoses were defined as follows: "Gastrointestinal illnesses" or "diarrheal illnesses" included acute gastritis, gastroenteritis, pain abdomen, appendicitis, and hepatitis; and "respiratory illnesses" included upper and lower respiratory tract infections, otitis media, bronchitis, and bronchial asthma.

The diagnosis was coded according to the international classification of diseases-9-Clinical modification. The data were entered into a PC file of access program and the statistical analysis was done using the Statistical Package for the Social Sciences version 7 SPSS.

### RESULTS

A total of 13,440 pediatric patients attended the OPD of CHC, Katra, from August 2017 to July 2018. Of these, 436 (3.24%) were pilgrims with age distribution ranging from newborns to 18 years with a median age of 4 years. Majority of patients 169 (38.7%) belonged to the newborn to 3 years age group, followed by 94 (21.5%) in the 3–6 years age group. The minimum number of patients 16 (3.6%) belonged to the 15–18 years age group. Males (57.6%) outnumbered the females (42.4%). The maximum pediatric pilgrim patient 144 (33%) was from the state of Uttar Pradesh followed by Delhi 98(22%). The demographic data of these pediatric pilgrim patients are shown in Table 1. The pediatric pilgrim patients coming to CHC, Katra, presented with a broad spectrum of travel-related morbidities, mainly gastrointestinal illnesses (37.80%), respiratory illnesses (30.96%), and febrile/systemic illness (21.7%). The other ailments included seizure, rash, trauma, infectious diseases, and animal/insect bites.

Gastrointestinal illnesses ( $n = 165$ , 37.8%) were the most common ailments among the pediatric pilgrims. Although >50% of children with gastrointestinal tract (GIT) illnesses were aged <6 years, the proportion of children suffering from gastrointestinal diseases increased with increasing age while the proportion with respiratory illnesses decreased [Table 2]. The climatic conditions had a significant impact on the pattern of the diseases with diarrheal diseases more prevalent in summer seasons while respiratory diseases more common in the winter season. Nearly 55% of patients with GIT problems required admission either due to severe dehydration or were not tolerating orally at all with a mean hospital stay of 5.4 h and remaining patients were managed with oral medications, zinc, and oral rehydration solutions (ORS) alone. 79% of mothers had heard about ORS, but only 20% knew the correct method of preparing ORS majority of infants (>90%) suffering from acute gastroenteritis were either on top feeding alone or mixed feeding with formula milk using bottles.

Respiratory system ailments ( $n = 135$ , 30.96%) were the second most frequent illness among the pediatric pilgrims. These illnesses were more common in the winter months and included upper respiratory tract infections such as common

**Table 1:** Age- and sex-wise CHD patients

Age (in years)	Male (%)	Females (%)	Total (%)
0–3	98 (39.04)	71 (38.3)	169 (38.7)
3–6	57 (22.7)	37 (20)	94 (21.5)
6–9	39 (15.5)	26 (14.1)	65 (14.9)
9–12	24 (9.5)	22 (11.9)	46 (10.5)
12–15	23 (9.16)	23 (12.4)	46 (10.5)
15–18	10 (3.9)	6 (3.2)	16 (3.6)

CHD: Coronary heart disease

**Table 2:** Distribution of CHD subjects according to the type of morbidity

Age	Age	URTI	LRTI	Seizure	Fever alone	Any other
0–3	51	21	54	2	12	29
3–6	34	7	23	1	13	16
6–9	28	8	7	0	7	15
9–12	21	8	0	1	7	9
12–15	26	5	0	1	5	9
15–18	5	2	0	0	3	6
Total	165 (37.8)	51 (11.6)	84 (19.2)	5 (1.1)	47 (10.7)	84 (19.2)

URTI: Upper respiratory tract infections, LRTI: Lower respiratory tract infections, CHD: Coronary heart disease

cold (influenza), acute pharyngitis, tonsillitis, and acute otitis media and lower respiratory infections such as bronchiolitis, wheezy bronchitis, acute exacerbation of bronchial asthma, and pneumonia with or without respiratory distress. Bronchiolitis, wheezy bronchitis, and acute exacerbation of bronchial asthma constituted about 61% of all the respiratory problems with 0–3 years (55.55%) followed by 3–6 years age group being the most common sufferers. Mild-to-moderate respiratory distress was present in 65% of cases while 18% had severe respiratory distress. Severe respiratory distress was more commonly seen in the 0–3-year age group. All the patients were managed according to the protocol on OPD basis or had a brief stay for nebulization in the stabilization room.

Fever alone as the chief complaint was seen in 10.7% of the pediatric pilgrims. Among these, nine patients were managed as enteric fever.

Two babies aged 11 months and 14 months had first episodes of simple febrile seizures while a 5 years old had a first relapse of febrile seizure. Two children aged 10 and 13 years with seizure disorder had fresh episodes as they had missed their antiepileptic medicines since they left for pilgrimage.

A total of 11 children had a history of animal bite, of which nine children were bitten by monkeys. One child had a dog bite and another was bitten by a mule.

Rash was the presenting complaint in 26 children and the common causes included urticaria, scabies, exanthematous viral illnesses, insect bites, and allergic. Rash was seen more frequently in the younger children.

A total of five pilgrim patients between the ages of 12 and 18 years had chickenpox.

Four patients had a history of trauma due to fall while walking on the track while one patient had suffered injuries due to fall from the mule. None of the patients had any fracture or any serious injury. One child required stitches on forehead for lacerated wound due to fall on the stairs of the hotel.

Nine patients were treated as enteric fever on OPD basis while four children were managed as acute hepatitis.

## DISCUSSION

Shri Mata Vaishno Devi Shrine, one of the oldest and most famous shrines of India, is visited by lakhs of devotees every year. Due to the long journey to be traveled by foot or ponies, the sudden climatic variations at the top of the hill, and heavy rush during peak months, many pediatric pilgrims often suffer from a wide variety of travel-associated morbidities. The most common ailments were related to gastrointestinal system followed by respiratory system. Both these ailments were related to the seasons; diarrheal illnesses being more common in the summer season while respiratory problems were more frequently encountered in the winter season. Bad eating habits and poor hand, water hygiene was found to be main reason for diarrheal illnesses. While proportion of children suffering from diarrheal illnesses increased with increasing age, the proportion of children suffering from respiratory illnesses decreased with increasing age. Fever was a frequent accompanying complaint. The other less frequent health problems included rash, animal bites, trauma, seizure, and infectious diseases such as typhoid, chickenpox, and hepatitis.

A global analysis done on ill returned children by Haggmann *et al.*<sup>[1]</sup> showed that diarrhea is the leading diagnosis in returned children and our study supports this finding. Comparable to the study done by Steffen *et al.* which showed that traveler's diarrhea affects over 50% of travelers and can disrupt holidays,<sup>[2]</sup> gastrointestinal ailments were the most common illnesses among the pediatric pilgrim patients in the present study. These were more common in the months of May and June which also witness the maximum pilgrim rush to Mata Vaishno Devi likely due to school vacation periods in most parts of India.<sup>[3]</sup> The most frequent bacterial pathogens of traveler's diarrhea are *Escherichia coli*, *Campylobacter*, *Shigella*, and *Salmonella*. Many studies have found that young children with traveler's diarrhea more frequently need to be hospitalized.<sup>[4-7]</sup> In the present study also, 55% of children with diarrheal illnesses were admitted for intravenous fluid therapy. In the present study, 79% of mothers had heard of ORS and only 20% knew the correct way of preparing ORS. In a similar study done by Rao *et al.*,<sup>[8]</sup> only 47.2% of mothers had heard of ORS and 31% knew how to correctly make ORS while in a study conducted by Pahwa *et al.*,<sup>[9]</sup> 71.1% of

**Table 3:** Month-wise distribution of subjects

Name of the month	Number of patient treated	Referred patient
August-17	20	
September-17	60	
October-17	40	
November-17	21	1
December-17	33	1
January-18	22	
February-18	24	
March-18	10	
April-18	20	
May-18	82	2
June-18	79	3
July-18	25	
August-18	nil	
September-18	nil	
October-18	nil	
November-18	nil	
December-18	nil	
Total	436	

**Table 4:** State-wise distribution of subjects

Residence	Number of children
Uttar Pradesh	144
Delhi	98
Haryana	19
Rajasthan	22
Madhya Pradesh	26
Bihar	23
Punjab	13
Jammu and Kashmir	16
Himachal	1
Andhra Pradesh	4
Kerala	1
Maharashtra	28
Gujarat	20
Uttarakhand	1
Jharkhand	1
Karnataka	1
Orissa	3
West Bengal	4
Assam	2
Chhattisgarh	4
Chandigarh	1
Australia	1
Dubai	1
Tamil Nadu	1
Unknown	1
Total	436

mothers had heard of ORS and 9.1% of mothers interviewed knew the proper method of preparing ORS. Respiratory tract infections are the second most common cause of illness in travelers.<sup>[10,11]</sup> In the present study also, respiratory illnesses were the second most common illness in the pediatric pilgrims. The present study showed that 55.55% of children suffering from acute respiratory infections were <3 years of age and is comparable to the study done by Prajapati *et al.*<sup>[12]</sup> in which of 500 children, about 55.0% of children suffering from acute respiratory infections were in between 1 and 4 years, 33.2% were below age of 1 year, and 12% were in between 4 and 5 years of age.

The present study illustrates the most common illnesses with which pediatric pilgrims usually suffer and it was observed that the majority of these ailments can be prevented by following simple preventive measures by the parents. Breaking the human-to-human transmission cycle remains the cornerstone of infection control practices, especially infections with high attack rate like influenza (H1N1). Frequent hand washing is one of the most effective methods to prevent transmission of pathogens associated with health care. In addition to hand hygiene, non-pharmaceutical interventions known to reduce the spread of respiratory viruses from person to person include avoiding travel to destinations at the time of peak rush and winter months, avoiding close contact with people suffering from acute respiratory infections, cough and sneeze etiquette, adhering to food safety, and hygiene rules (avoiding unsafe water, raw fruits, and vegetables unless they have been peeled).<sup>[13]</sup> The adage “boil it, cook it, peel it, or forget it” seems reasonable but is often not practical. In smaller children, powdered formula milk should be prepared with boiled water and meticulous cleanliness of bottles be ensured. Breastfeeding is a preferred option to formula because it is more hygienic and may also provide immunoglobulin A antibody protection against gut pathogens. Parents should be made aware of the benefits of ORS in diarrheal illnesses. Vaccinations such as pneumococcal, HiB, and yearly influenza (flu vaccine) can play a major role in preventing respiratory ailments and associated morbidity in younger children coming to Mata Vaishno Devi. In case of asthmatic children, parents should carry bronchodilator therapy. Parents should carry the prescribed medicines like antiepileptic drugs and always check for their compliance. Children while traveling should never try to pet, handle, and tease or feed animals. The present study had few limitations like we could not calculate the absolute risk of acquiring specific infections and their incidence as we did not know how many children traveled during the same period without developing an infection. Furthermore, many children with minor or major illnesses might not have come to this hospital. We included only those patients who consulted during OPD timings leaving a chunk of children who might have visited during other timings.

## Strengths and Limitations

We could study a larger number of children presenting in OPD of Katra Hospital visiting Mata Vaishno Devi Shrine Board with diverse geographical and ethnic backgrounds. However, the limitation is that we could not calculate the absolute risk of acquiring specific infections and their incidence as we did not know how many children traveled during the same period without developing an infection. Furthermore, many children with minor or major illnesses might not have come to this hospital. We included only those patients who consulted during OPD timings leaving a chunk of children who might have visited during other timings.

## Recommendation

Appropriate precautions such as food hygiene, safe drinking water, and hand hygiene and prior vaccinations such as pneumonia, HiB, influenza, typhoid, and hepatitis A vaccines can decrease many diseases in pediatric pilgrims coming to Shri Mata Vaishno Devi.

## CONCLUSION

Children up to 6 years are more prone for illnesses, particularly those <3 years old while going to Shri Mata Vaishno Devi.

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