



## Original Article

# Profile of Day Case Paediatric Surgical Patients in a Tertiary Care Hospital in Bangladesh

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### Abstract

**Introduction:** In recent years, the prevalence of Paediatric Day Case Surgery has risen significantly in Western countries. This trend offers notable benefits, including decreased psychological stress for both children and parents, as well as reduced hospital costs, instances of nosocomial infections and the length of surgical waiting lists. This study aimed to assess the profile of day-case paediatric surgical patients in a tertiary care hospital in Bangladesh. **Materials & Methods:** This prospective study was conducted for a period of 6 months from July to December 2014 with ethical clearance from respective IERB. A total of 298 surgical operations were performed on infants and children in the paediatric surgery department of Bangabandhu Sheikh Mujib Medical University (BSMMU) having optimum operating, anesthetic and post-anesthetic recovery facilities. Among the patients, 103 patients were undergone as day-case procedures. All data was collected using a pre-formed questionnaire. Collected data were analyzed using descriptive statistics. Analysis of data was carried out by using SPSS V22.0 for Windows. After analysis, the data was presented in tables and charts. **Results:** The youngest patient was 18 days old and the oldest was 14 years old. The median age was 4.5 years. Males dominated over the females with a ratio of 1.8:1. In the post-operative period, 87.3% of patients required two doses of oral analgesia, with 29.1% returning to normal activity the next day. Complications occurred in 3.6% of patients under 1 year and 8.6% of those over 1 year, with one case of post-operative pneumonia requiring hospitalization. Most surgeries (54.4%) were performed within 2-4 weeks of the first outpatient visit, with an average waiting time of 20 days (SD 6.2 days). Parents generally accepted the outpatient procedure, with 44% suggesting improvements in the waiting room and time, 6.4% fully satisfied, and 2.7% expressing concerns about transportation, post-operative care, and pain management at home. **Conclusion:** Paediatric day-case surgery is being practiced safely and cost-effectively at BSMMU. Unplanned overnight admissions are low, possibly due to well-selected and well-monitored cases. Children of all age groups, including neonates, are suitable for pediatric day-case surgery. The socio-economic condition and educational status of the caregivers are not a bar for day-case surgery.

**Keywords:** Patient Profile, Pediatric Surgery, Socioeconomic Condition, Caregivers.

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### Introduction

In recent years, there was a progressive increase in day-case surgery. Presently, a substantial portion of operations in contemporary pediatric hospitals are conducted on a day surgery basis. The advantages of day-case surgery in children includes less time away from home allowing the child to sleep in their own bed that night, reduced hospital costs, fewer staff required and reduction in nosocomial infections<sup>1</sup>. The modality of the health care delivery system is changing day by day. Advancement of science and technology blessed medical science to a new standard. Surgery, the previous nightmare of the patient has become more patient-friendly and safe. Research is being carried out all over the world to make it more convenient. Along with the conventional inpatient and outpatient system, newer concepts, like ambulatory surgery, short-stay

surgery or day case surgery have been allowed to grow and run parallel<sup>2</sup>.

Day case surgery, ambulatory surgery and outpatient surgery are used interchangeably to describe non-emergency surgery performed on carefully selected patients who are discharged home after recovery from anaesthesia on the same day<sup>3</sup>. With the advancement of anaesthesia, the scope of day-case surgery is increasing worldwide. Children are good candidates for day case surgery because they are relatively healthy, and the surgical procedures they require are generally predictable and often of short duration<sup>4</sup>. Moreover, lower costs reduced psychological trauma to both parents and children and rapid recuperation has made the day case surgery more popular among pediatric surgical

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patients. Nowadays about 70-80% of paediatric operations are done as day cases internationally<sup>5</sup>. Careful patient selection is the key to successful daycare surgery. Selection is not only a matter of choosing patients with conditions that may be treated as a day case but also considering their medical and social reasons. The British Day Case operational guideline states a list of 25 operations that can be done as day cases<sup>6</sup>. But progressive modernization of surgery and anaesthesia is giving us scope to explore more and more operations that can be done as day cases. Because of the economic inequality and the absence of strict laws and quality control, outpatient surgery in the Indian subcontinent is performed in chemists' shops, private clinics, nursing homes, primary health centers, civil hospitals, peripheral medical colleges as well as tertiary care centers<sup>7</sup>.

However, no standard protocol for day-case surgery has been developed yet in our country. The department of paediatric surgery, BSMMU took the initiative to develop and follow a standard protocol for pediatric day-case surgery. Day-case surgery is being practiced in a limited manner in some other hospitals. We need to consider this approach on a wider scale as socio-economic limitations put restraints on our existing surgical healthcare delivery system. The present model study is based on the activity of the department of paediatric surgery, BSMMU, in providing day case surgery comparing it with the inpatient setting in this hospital. The general objective of this study was to assess the profile of day-case pediatric surgical patients in a tertiary care hospital in Bangladesh.

### Materials and Methods

This prospective study was conducted to assess the profile of day-case pediatric surgical patients in a tertiary care hospital in Bangladesh with the specific objectives to know the socioeconomic status of the participants and to analyze the parents' perception about day case surgery. This was conducted in a period of 6 months from July to December 2014. A total of 298 surgical operations were performed on infants and children in the paediatric surgery department of BSMMU (Bangabandhu Sheikh Mujib Medical University) having optimum operating, anesthetic and post-anesthetic recovery facilities. Among these patients, 103 patients were undergone as day case procedures. The inclusion criteria of the study were patients have a competent relative or caregiver to look after him or her at home for the next 24-48 hours, whose residences are not far away from the hospital, who were fit for general anaesthesia according to ASA score, with no other pathology/co-morbidity, psychologically stable and who were willing to give consent. Exclusion criteria were patients with severe respiratory illness, cardiac

disease or congenital malformation and were not willing to participate in the study.

Preoperative starvation was kept to a minimum to prevent hypoglycemia. No premedication was administered. General anaesthesia was administered to all the patients by the pediatric anesthetist. The induction was carried out either by intravenous thiopental sodium or with halothane delivered via a facemask depending upon the effect of premedication. Maintenance therapy consisted of halothane, nitrous oxide and oxygen administered through a facemask. Endotracheal intubation was performed only for specific indications. e.g. long procedures, operations of the head and neck and when there was difficulty in maintaining an adequate airway. The same surgical team carried out all the operations with different sets of anesthetists. Following the operation, all patients were kept in the postoperative recovery room under observation. All data was collected using a pre-formed questionnaire. Collected data were analyzed using descriptive statistics. Analysis of data was carried out by using a statistical package for social science (SPSS) v22.0 for Windows. After analysis, the data was presented in tables and charts. Ethical approval was received from the ethical review committee of BSMMU. Written informed consent was obtained from each subject.

### Results

The youngest patient was 18 days old and the oldest was 14 years old. The median age was 4.5 years. Males dominated over the females with a ratio of 1.8:1 (Table-I). The majority of patients (56.4%) came from low socio-economic conditions while 11.6% came from high socio-economic status (Table-II). 64% of mothers or primary caregivers of the child have the educational status of primary or below primary level and only 16.6% crossed the higher secondary level (Table-III). More than 50% of patients received day surgery coming from a distance of less than 20 km from their home and only 16.5% of patients came from more than 20 km away (Table-IV). The variety of surgical procedures are enlisted in Table-V. Here we found that inguinal herniotomy has topped the list (18.4%) among all procedures.

**Table-I: Distribution of patients by age and gender**

Age Group	Male	Female	Total	%	Male: female
0-5 years	33	20	53	51.4	1.8: 1
5-10 years	22	14	36	34.9	
10-15 years	11	3	14	13.5	

**Table-II: Monthly income of the head of the family**

Monthly Income (BDT)	No. of family (n)	Percentage (%)
<10,000	58	56.4
10,000-20,000	33	32.0
>20,000	12	11.6

**Table-III: Educational status of primary caregiver**

Education Level	No. of caregiver (n)	Percentage (%)
Below primary	35	33.9
Primary	31	30.1
Secondary	20	19.4
Higher	17	16.6

**Table-IV: Distance from residence to hospital**

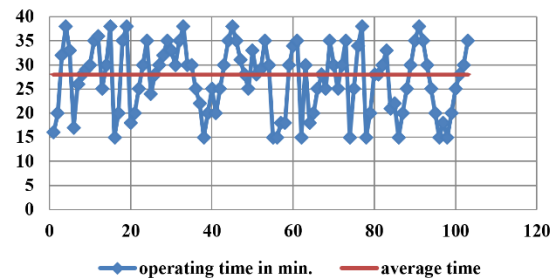
Distance (km)	Number (n)	Percentage (%)
0-10 km	50	48.5
11-20 km	36	35
>20 km	17	16.5

**Table-V: Types of operations of the study cases (n=103)**

Operation	Number (n)	Percentage (%)
Inguinal herniotomy	19	18.4
Sclerotherapy for haemangiomas	16	15.5
Rectal polypectomy	15	14.5
Excision of dermoid	13	12.6
Circumcision	7	6.8
Frenulectomy	7	6.8
Rectal biopsy	7	6.8
Excision of lipoma	3	2.9
Lymph node biopsy	2	1.9
Excision of sebaceous cyst	2	1.9
Cystoscopy	2	1.9
Orchidopexy	2	1.9
V-P shunt removal	2	1.9
Meatotomy	2	1.9
Thiersch operation	2	1.9
Umbilical hernia repair	2	1.9
<b>Total</b>	<b>103</b>	<b>100</b>

The average operating time was 28 minutes (range 15-38 min), and anaesthesia time was 38 minutes (range 25-56 min). The index of recovery was the return of rational response to verbal command in older children and crying in neonates (Figure-1). Figure-2 depicts that most of the patients (73%) leave the hospital within 6 hours and only 1% of patients require hospital admission due to postoperative pneumonia but recovered well within

days. All these were managed by their parents satisfactorily concerning feeding, pain, and routine activities. Only 17% of parents called one of the surgeons on the telephone to inquire about their apprehensions at home and all were explained and satisfied. On average, post-operatively, 87.3% required two doses of oral analgesia and did not require any special care and 29.1% returned to their normal activity on the next day (Table-VI). Post-surgical complications incidence was 3.6% among the <1 year and 8.6% among the >1 year age group and one patient was admitted to the hospital for a few days due to post-operative pneumonia. There were no deaths in the whole group (Table-VII). Most of the patients (54.4%) got operated on within 2-4 weeks after their first visit to the outpatient department. The average waiting time was 20 days with a standard deviation (SD) of 6.2 days (Table-VIII).

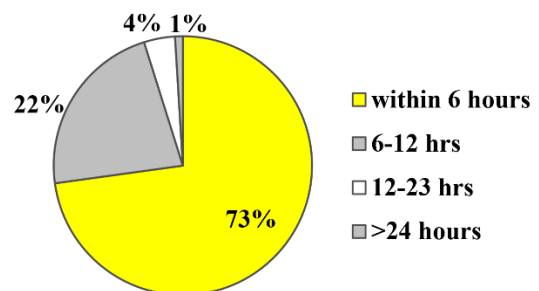


**Figure-1: Operation time of the study cases (mins)**

**Table-VI: Post-operative events at home and management**

Post-operative behavior	n	%	Remarks
Pain	90	87.3	Oral analgesics
Vomiting	10	9.7	No treatment required
Fever	13	12.6	Oral antipyretic
Feeding disturbance	20	19.4	No treatment required
Drowsiness and general anxiety	25	24.2	No treatment required
Sore throat	8	7.7	No treatment required
Same day ambulation	30	29.1	Not required

n=Number of Patient, %=Percentage



**Figure-2: Hospital stays of the study cases (hours)**

**Table-VII: Post-operative complications of cases**

Post-operative Complications	Number (n)	Percentage (%)
Wound infection	1	0.9
Hematoma	1	0.9
Bleeding	1	0.9
Pneumonia	1	0.9
<b>Total</b>	<b>4</b>	<b>3.6</b>

**Table-VIII: Waiting time from first visit up to operation date**

Waiting time	Number (n)	Percentage (%)
1-2 weeks	45	43.7
2-4 weeks	56	54.4
>4 weeks	2	1.9

**Table-IX: Parents' perception about different steps of day surgery at BSMMU**

Parents' perception	Satisfied	Good	Average	Not good	Unsatisfied
Waiting time	12	32	27	17	15
Waiting room	0	0	10	90	3
Fasting time	3	79	6	13	2
Surgeon	13	37	53	0	0
Anesthetist	11	32	53	7	0
Nursing	8	66	22	7	0
Pain control	12	38	50	2	1
Costing	0	66	37	0	0
Follow up	0	58	39	2	4
<b>Overall score</b>	<b>59 (6.4%)</b>	<b>408 (44%)</b>	<b>297 (32%)</b>	<b>138 (14.9%)</b>	<b>25 (2.7%)</b>

**Discussion**

The present study has revealed a preponderance of the age group 0-5 years. Fifty-one percent in the day case series have fallen in this group. In a study by Kwok, et al.<sup>8</sup> demonstrated that children less than 5 years are safe for general paediatric surgery. In our study, the lowest age was 18 days, and our observation corresponds with those of Stiff, et al<sup>9</sup>. The Gender ratio is also higher at 1.8:1 for males in the day case series and this is in line with common trends. The reason is obvious in our male-dominant socioeconomic condition, but the scenario has changed enough. In the case of assessing socioeconomic status, we have considered the average monthly income of the head of the family. We observed that 56.4% of patients came from low socioeconomic status while only 11.6% came from higher status. This represents the socioeconomic status of our country. Socioeconomic and intelligence status are also important as they relate to easy home convalescence.

We found most mothers (33.9%) had an education below primary level, but they managed their child at home very easily. So, patient care by a mother of average intelligence is sufficient for easy convalescence, which is supported by Erden, et al.<sup>10</sup> and Hallstrom, et al<sup>11</sup>. In our study we observed that 66.1% of parents were educated. This indicates that the day case strategy is gaining popularity among the educated population in our country. When first started, day-case surgery was restricted to patients living within 5 miles of the hospital<sup>12</sup>. However, Usang, et al<sup>12</sup>. considered that distance should not be a contraindication to day-case surgery. In the present study, most of the patients (83.5%) came from

within a 20 km radius of our hospital but 16.5% came from distant places and all recovered well without complication, which indicates that distance was not a bar for most of the Day cases. Among 103 cases we have done a variety of operations. We have also observed in our model study that there have been no major complications. Letts, et al.<sup>4</sup> observed in their series of 4,899 cases, a complication rate of 3.6% while Calder, et al.<sup>13</sup> observed in their series, 0.87% complications carried out in a dedicated daycare center. We have come across 1 complication which constitutes 0.9% which is almost like the series of Calder, et al<sup>13</sup>. The wound infection rate of 2.8% for our series is very comparable with other similar studies<sup>14</sup> and the overall post-surgical complication rate of 8.3% does not exceed if compared with the studies for hospitalized patients<sup>15,16</sup>. We also observed minimal disruption of the daily routine of families due to short hospital stays.

In our study, the average hospital stay for a patient was 240 minutes, which was comparable to other well-equipped centers in developed countries<sup>9,13,17</sup>. Hospital admission rate after outpatient surgery in our series is 0.9% as compared to the other centers, which have reported 0.8-1.6%<sup>12,14,15,18</sup>. Moreover, in the day case surgery system, there has been no accommodation cost, no food cost, and no cost for hospital stay. Travel costs have been minimal in the daycare system. Day surgery rates have risen globally due to better healthcare systems, new surgical, anesthetic, and analgesic techniques and consolidation of best management practices with less invasive surgical techniques and shorter hospital stays & early discharge<sup>19,20</sup>.

### Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community. Cost-effectiveness was assumed on an average basis almost hypothetically. So, it could be overestimated.

### Conclusion

Pediatric day surgery is being practiced safely and cost-effectively at BSMMU. Unplanned overnight admissions are low, possibly due to well-selected and well-monitored cases. Children of all age groups, including neonates, are suitable for pediatric day-case surgery. The socio-economic condition and educational status of the caregivers are not a bar for day-case surgery.

### Recommendation

Poverty makes the need for day case surgery more relevant in the developing continents. Efforts, therefore, should now be geared at upgrading our existing facilities at various centers to at least dedicated units and setting of agenda for a wider embrace of day case practice.

### Conflict of Interest

The authors declared that they have no conflicts of interest.

### References

- Upadhyaya M, Lander A. Day-case surgery in children. *Surgery*. 2013; 31 (3): 101-46. doi: <https://doi.org/10.1016/j.mpsur.2013.01.010>.
- Association of Anaesthetists of Great Britain and Ireland; British Association of Day Surgery. Day case and short stay surgery. *Anaesthesia*. 2011; 66 (5): 417-34. doi: 10.1111/j.1365-2044.2011.06651.x.
- Scarlett M, Crawford-Sykes A, Thomas M, Duncan ND. Paediatric day surgery: revisiting the University Hospital of the West Indies experience. *West Indian Med J*. 2007; 56 (4): 320-5.
- Letts M, Davidson D, Splinter W, Conway P. Analysis of the efficacy of pediatric day surgery. *Can J Surg*. 2001; 44 (3): 193-8.
- Segerdahl M, Warrén-Stomberg M, Rawal N, Brattwall M, Jakobsson J. Children in day surgery: clinical practice and routines. The results from a nation-wide survey. *Acta Anaesthesiol Scand*. 2008; 52 (6): 821-8. doi: 10.1111/j.1399-6576.2008.01669.x.
- World Health Organization. Regional Office for Europe, European Observatory on Health Systems and Policies, Castoro, Carlo, Bertinato, Luigi, Baccaglioni, Ugo. et al. 2007. Day surgery: making it happen. Available at: <https://iris.who.int/handle/10665/107831>. [Accessed on June 12, 2014]
- Jyotsna W. The current status of day care surgery-A review. *Indian J Anaesth*. 2005; 49 (6): 459-66.
- Kwok CS, Gordon AC. General paediatric surgery for patients aged under 5 years: a 5-year experience at a district general hospital. *Ann R Coll Surg Engl*. 2016; 98 (7): 479-82. doi: 10.1308/rcsann.2016.0175.
- Stiff G, Haray PN, Chilcott M, Williams I, Watkins G, Foster ME. Day-case surgery in children under 2 years of age: experience in a district general hospital and survey of parental satisfaction. *J R Coll Surg Edinb*. 1996; 41 (6): 408-11.
- Erden IA, Pamuk AG, Ocal T, Aypar U. Parental satisfaction with pediatric day case surgery. *Middle East J Anaesthesiol*. 2006; 18 (6): 1113-21.
- Kristensson-Hallström I, Elander G, Malmfors G. Increased parental participation in a paediatric surgical day-care unit. *J Clin Nurs*. 1997; 6 (4): 297-302.
- Usang UE, Sowande OA, Ademuyiwa AO, Bakare TI, Adejuyigbe O. Day case surgery in Nigerian children: influence of social circumstances of patients. *Ann Afr Med*. 2009; 8 (1): 42-5. doi: 10.4103/1596-3519.55763.
- Calder F, Hurley P, Fernandez C. Paediatric day-case surgery in a district general hospital: a safe option in a dedicated unit. *Ann R Coll Surg Engl*. 2001; 83 (1): 54-7.
- Mandhan P, Shah A, Khan AW, Muniruddin, Hasan N. Outpatient pediatric surgery in a developing country. *J Pak Med Assoc*. 2000; 50 (7): 220-4.
- Elebute O, Ademuyiwa A, Bode C, Idiomi-Thomas H. Pediatric day case surgical practice at a tertiary hospital in lagos: how have we fared? *Ann Med Health Sci Res*. 2014; 4 (4): 559-61. doi: 10.4103/2141-9248.139316.
- Roberts L. Day surgery - National and international. *Ambul Surg*. 2006; 12 (3): 143-5. doi: 10.1016/j.ambur.2005.02.002.
- Abdur-Rahman LO, Kolawole IK, Adeniran JO, Nasir AA, Taiwo JO, Odi T. Pediatric day case surgery: experience from a tertiary health institution in Nigeria. *Ann Afr Med*. 2009; 8 (3): 163-7. doi: 10.4103/1596-3519.57238.
- Agbakwuru EA, Faponle AF, Adesunkanmi AR, Ogundoyin O. Practice and acceptance of day-care surgery in a semi-urban Nigerian hospital. *East Afr Med J*. 2001; 78 (4): 170-3. doi: 10.4314/eamj.v78i4.9057.
- Jarrett PE. Day care surgery. *Eur J Anaesthesiol Suppl*. 2001; 23: 32-5.
- Mishra P, Foley D, Rutledge E, Allford M. Is day surgery failing our children? *J Paediatr Child Health*. 2015; 51 (10): 960-1. doi: 10.1111/jpc.12958.

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