

## ROLE OF DEMOGRAPHICS IN DELAYED DISCHARGE OF DAY CARE SURGERIES: A PROSPECTIVE OBSERVATIONAL STUDY

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### Abstract

**Background:** Modern era of surgery is gradually evolving from traditional extended in-hospital care to early mobilization and discharge of patients from health care facility. Delayed discharge of patient from healthcare facility is much bigger issue than its presumed. Delayed discharge can be thought when patient stays in healthcare facility beyond the appropriate time due to any reason. So, this study investigated various reasons of delayed discharge prevalent in our geographical area. **Material and Methods:** A prospective, observational study was conducted among patients undergoing for elective day care surgery. All IPD patients undergoing day care surgeries, who resides in healthcare facility beyond 23 hours 59 minutes with having Modified Aldrete score of 9 or above were included. A total of 221 patients undergoing day care surgeries in our institute were selected. Patients posted for day care surgeries were identified by using random sampling method, afterwards post 24 hours of their duly posted surgeries. A pre-defined structured questionnaire was filled by trained staff members or duty doctor. **Results:** During the study period, total 337-day care surgeries were performed in the department and the number of patients identified with delayed discharges were 221. **Conclusion:** our work shows that demographic and social factors play a very important role in deciding optimum timing of discharging of patients following day care surgeries. so before framing discharge policies socio-demographic factors needs to meticulously assessed. Our findings should be confirmed in future by large population based prospective studies and more research trials are needed to form standard operating protocols for operation theatres taking due consideration of socio-demographic factors.

**Keywords:** Demographics, Delayed Discharge, Day Care Surgeries,

## INTRODUCTION:

Modern era of surgery is gradually evolving from traditional extended in-hospital care to early mobilization and discharge of patients from health care facility. Keeping in mind the current complexity and overly occupied current lifestyle, no patients want undue delay in his surgery or unnecessary over stay in health care facility. Number of surgeries performed on daily basis have also increased drastically due to our improvement in medicine domain and also with significant technological advances. So, overstay of patients is of no use either to the patients and caregivers or to the healthcare infrastructure.

Day care surgeries is sought-after due to its all-inherent edge over traditional methods of care. In day care set up there is intention of discharging patient from healthcare facility at earliest after surgeries if patients are at sound physical and mental state and should be delayed beyond 24 hours. Ideally the patients should be sent home if he has completely recovered from anesthesia, free from any sort of physical or mental stress or discomfort, should have responsible caregiver at home so that healthcare facility could be contacted anytime in case of any emergent conditions. The judgement of sending patient should be made after discussion with patient, anesthetist and the operating surgeon. Advantages of day care surgeries are immense some memorable includes reduction in post-operative infection rates, less time consumption, better patient satisfaction. For health care facility it not only causes less burden to existing capacity but also leads to better management of critical care needing patients and improved bed management in acute crisis services.<sup>i,ii,iii</sup>

Delayed discharge of patient from healthcare facility is much bigger issue than presumed. Delayed in discharge can be thought when patient is made to stay in healthcare facility beyond the appropriate time due to any reason. On viewing its economic impact on healthcare facility, cost from NHS England shows about £100 m per year<sup>iv</sup> and resulted in 1.2 million bed-days lost in 2013-14.<sup>v</sup> This additional cost on healthcare system directly or indirectly is reflected upon patient care and on efficient performance of healthcare system and fraternity.

It's clear that is the need of hour for critical evaluation for various parameters for delayed discharge of patients. It's a multilevel problem which is due from patient's side reasons, medical causes and various environmental factors. Of all the causes of delayed discharges demographics parameters of patients play a vital role as many of them are non-modifiable factors so we can be just being prepared for it. This study is framed with intention of identifying of all reasons of delayed discharge prevalent in our geographical area. It will not only help us regionally but will also serve as base for large multicentre population-based study. Keeping this background to catch sight of impact of demographics profile of patients on delayed discharge of day care surgeries following objectives were framed;

- 1-To asses age-related causes of delayed discharge
- 2-To find out sociodemographic factors of delayed discharge
- 3-To find out personal and familial reasons among them

## **MATERIALS AND METHODS:**

### **Study area and study population:**

The present study is a prospective observational study conducted at Government Medical College Ferozabad, a tertiary care Centre. This study was conducted after proper approval by institutional review board

**Ethical clearance:** our research work was approved by our institutional ethical committee.

**Duration of study:** 6 months (1<sup>st</sup> June 2022-31<sup>st</sup> November 2022)

**Study design:** Prospective observational study

### **Inclusion criteria:**

All IPD patients undergoing day care surgeries, who resides in healthcare facility beyond 23 hours 59 minutes with having Modified Aldrete score of 9 or above were included.

### **Exclusion criteria:**

Patients discharged or referred within 24 hours, not giving consent and having Modified Aldrete score below 9 were excluded from study.

### **Methodology:**

All cases were identified with new assigned number, not using the hospital-based identifiers, to keep confidentiality of patients. We have taken 24 hours' policy for discharge of day care cases. Patients posted for day care surgeries were identified by using random sampling method, afterwards post 24 hours of their duly posted surgeries. A pre-defined structured questionnaire was filled by trained staff members or duty doctor in local language and afterwards comprehended in hard copy. Evaluation was done with pre-submitted protocols every 24 hourly till the patient discharged.

As a standard working norm, patients were asked for discharge from hospital and were given discharge between 9 am to 10 am in morning or in between 3 to 5 pm in evening. Patients were sent home only after thorough physical visit by at least by senior consultant or faculty. Caregivers provided with contacts numbers in case of any emergency and follow-up is made in OPD visits. Patients were only sent home if he or she fulfil all of the following criteria:

- 1: Complete recovery from effect of anesthesia which to be confirmed by anesthetist and mentioned in bed side file of patient
- 2: Patients free from any sort of physical and mental discomfort
- 3: Normal systemic and local examination.
- 4: Patient able to take fluids and semisolid foods
- 5: Patients passed urine and flatus
- 6: No Evidence of any oozing or bleeding from incision site

Apart from symptomatic relief Modified Aldrete score is also taken in consideration for deciding the optimum condition of patient which must be fulfilled before sending the patient from healthcare facility. Aldrete scoring was first framed by Jorge Antonio Aldrete in 1970. <sup>vi</sup>

The current modified version which is used nowadays consist of following components in Table 1.

**Table 1. Modified Aldrete scoring System<sup>6</sup>**

Assessment items	Condition	Grade
Activity, able to move, voluntarily or on command	4 extremities	2
	4 extremities	1
	No	0
Breathing	Able to breathe deeply & cough freely	2
	Dyspnea, shallow or limited breathing	1
	Apnea	0
Consciousness	Fully awake	2
	Arousable on calling	1
	Unresponsive	0
Circulation (BP)	+/- 20% of pre anesthesia level	2
	+/- 20% to 49% of pre anesthesia level	1
	+/- 50% of pre anesthesia level	0
SPO2	Maintains SpO2 >92% in ambient air	2
	Maintains SpO2 >90% in ambient air	1
	Maintains SpO2 <90% in ambient air	0

**Interpretation:** A score of 9 and above is needed before discharging patient from healthcare facility.

**Statistical analysis:**

All data were recorded in Microsoft Excel spreadsheet version 2016 and later on data analysis using SPSS (Statistical Package for the Social Sciences) for Windows (version 23.0). Categorical variables were described as frequency (percentage), and mean ± standard deviation was used for continuous parameters.

In this case, categorical variables were compared between two or more groups using the Chi-square test & unpaired t-test. A two-tailed p-value of <0.05 was considered statistically significant for all analyses.

**RESULTS:**

During the study period, total 337-day care surgeries were performed in the department of surgery and the number of patients identified with delayed discharges were 221(65.6%). [Figure.1]

**Figure1: Prevalence of Delayed Discharge**

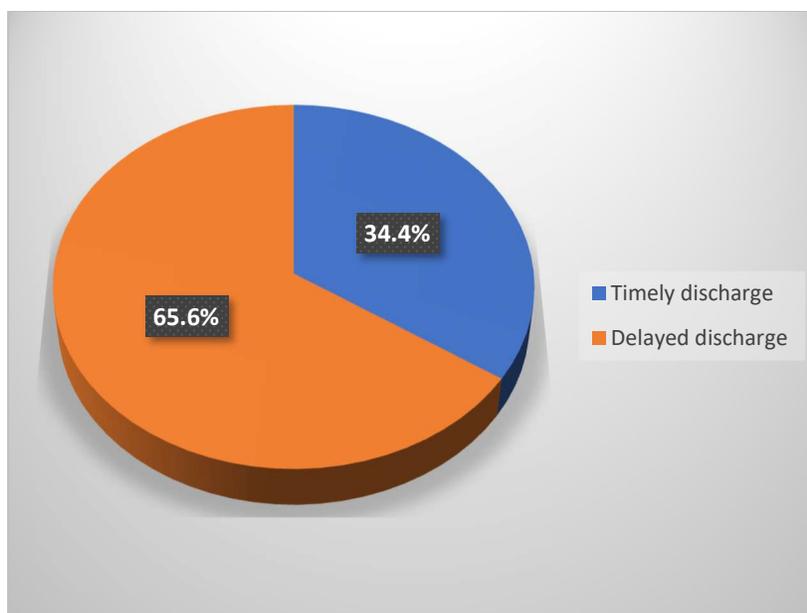


Table 2 is showing age wise distribution of study subjects. Among study subjects, most prevalent age group was of middle age 20-50 years (58.7%) followed by older age while only 18% of subjects below than age 20 years and more than 60 year (23.3%).

On observing sociodemographic distribution of study subjects among delayed discharge, there was male predominance 138 (62.4%) and belonged to urban area (70.5%). Around fifty five percent of them were married and most of them were financially independent (57.4%) and educated below graduation level. [Table 3]

Considering comorbidities among subjects, around two-third (67.4%) were evaluated without any associated medical illness while around one third subjects (32.6%) have found with associated comorbidity as a reason for delayed discharge. Around 14.02% subjects were diabetes, 5.8% overweight or obese and 4.9% were hypertensive. [Table 4]

**Table 2: Age-wise distribution of the study participants**

Age group(in years )	Frequency (n=221)	Percentage
0-9	11	4.9
10-20	29	13.1
21-30	24	10.8
31-40	49	22.1
41-50	21	9.5
51-60	37	16.7
61-70	40	18.09
71-80	7	3.1
Above 80	3	1.3

**Table 3: Sociodemographic distribution of the study participants**

Variables	Sub variables	Number of patients	Percentages
<b>Gender</b>	Male	138	62.4
	Female	83	37.5
<b>Area of residence</b>	Rural	65	29.4
	Urban	156	70.5
<b>Marital status</b>	Unmarried	98	44.3
	Married	123	55.6
<b>Financial status</b>	Employed/Financially independent	127	57.4
	Un-employed/Financially dependent	94	42.5
<b>Educational status</b>	Primary level	39	17.6
	Secondary level	147	66.5
	Graduation and above	16	7.2
	No formal education	19	8.5

**Table 4: Co-morbidities among study subjects**

Co-morbidities	Frequency (n=221)	Percentage
<b>Diabetes</b>	31	14.02
<b>Hypertension</b>	11	4.9
<b>Cardiac diseases</b>	3	1.3
<b>Tuberculosis</b>	6	2.7
<b>Obesity/ underweight</b>	13	5.8
<b>Others autoimmune and systemic diseases</b>	8	3.6
<b>No disease</b>	149	67.4

On observing various personal and familial reasons of delayed discharge among the participants, Sixty percent has given unjustified medical reasons although they were fit for discharge according to the standard discharge policy. Absence of responsible caregiver (18.5%), distance from health care facility (8.5%), lack for proper environment at home (7.6%) and difficulty to reach in case of emergency (2.7%) were the personal reasons unwillingness of discharge from hospital.

**Table 5: Various personal and familial reasons of delayed discharge**

Reasons stated for delayed discharge	Frequency (n=221)	Percentage
Absence of any responsible caregiver at home	41	18.5
Residence at distances from healthcare facility	19	8.5
Unable to reach healthcare facility timely in case of any emergencies due to lack of transport facility	6	2.7
Lack for proper environment at home	17	7.6
Medical reasons	133	60.1
Others	5	2.2

### DISCUSSION:

Our study projected that majority of delayed discharge findings were observed in age group 40 and above, most of the complaints of delayed discharge from facility was projected in age group of 50 and above which is about. These observations can be expected due to simultaneous association with co-existing diseases like diabetes, hypertension and others and also caregivers of old patients appeared to be apprehensive in view of any uneventful events.

These findings correlated to previous studies which also demonstrated similar results which projected an increase length of hospital stays<sup>vii-viii</sup>. Older population subset have a different set of needs and expectation so they cannot be treated and dealt in the same way as that of younger age group of patients, along with medical treatment these patients need social therapy, emotional support, and rehabilitation therapy. Some studies have highlighted these concerns like as that of work done by **Styrborn, K<sup>ix</sup>** and **Victor, C et al. <sup>x</sup>**.

Patients if they are kept more time than they are required are exposed to hospital-acquired infections and complications which is highlighted by the work of **Lefevre<sup>xi</sup> and colleagues**. So ultimately all these factors work whole and leads to overall increase in mortality and morbidity, this findings are further confirmed by the work of **Creditor, M. C<sup>xii</sup>**, **Sager, M. A., et al and colleagues<sup>xiii</sup>**.

As per education profile we observed that delayed discharge ailments goes in parallel with educational level. We observed that less educated patients and caregivers are more reluctant for timely discharge when compared to higher educated strata. We observed that almost majority of cases falls with those groups who do not have any formal education or with those whose formal education level below 12<sup>th</sup> standard with Indian education system school format. These findings can be explained on the basis of lower level of understanding of instructions given by healthcare providers and also low education level, poverty and many socio-demographic factors go side by side. Further more educated people generally are working and have more time constraints when compared to non-educated strata of population.

Co-existing disease in patient projected a very significant role on discharge status of day care patients. Patients having no associated disease showed higher rate of timely discharge when compared to patients having some associated disease. Result from our study describes diabetes as one the major causes of delayed discharge of day care surgeries. Diabetes is a multisystem disease, metabolic and chronic which is rising day by day epidemic proportions. Data from 2002 say diabetes as sixth cause of mortality with reported 73,249 deaths. <sup>xiv</sup>

Diabetes can lead to microvascular and macro vascular changes, eye changes, heart diseases etc. <sup>xv</sup> All these factors works together leading to increase morbidity and mortality of patient having diabetes and hence increasing the length of hospital stay and hence its attributed that patients having diabetes should undergo proper screening and managed with extra care.

Among other sociodemographic factors absence or lack of responsible caregiver and residence of patients at a distance from healthcare facility contributed a major proportion in reasons for delayed discharge after day care surgeries. Any responsible caregiver is a perquisite for timely discharge as in event urgent readmission or in emergence of any warning signs somebody is needed to contact the healthcare facility. Similarly, distant location of residence of patient works in almost very same way in precipitating anxiety in caregivers as they are constantly worried about emergency scenarios. Proper transportation facilities and rigorous counseling might lead to assurance in caregivers and these problems can be lowered to some extent.

Research studies by **Aldwinckle and Montgomery 2004<sup>xvi</sup>** and **Shnaider and Chung 2006<sup>xvii</sup>** also generated similar views and concluded that no proper home support or escort is one of the determining factors for delayed discharge of patients. So patient's social circumstances should be rigorously assessed in planning discharge protocols of day care surgeries. <sup>xviii</sup>

It's surprising to know that some studies have shown patients' willful suppressions of information regarding lack of proper escort or caregiver at home before surgeries in view of that it otherwise might lead to denial for surgeries. <sup>xix</sup>

The limitation of this study was convenience sample size and observational study design which was difficult to control all possible co-founders. we could not evaluate all risk factors which influences it and recommend a large-scale multi centric study with long-term follow-up.

#### **CONCLUSION:**

Based on study observations its well-founded that demographic factors play a very significant role on timely and optimum discharge of day care surgeries patients. So before planning any health policy in these domains it's advisable to address all the demographic parameters meticulously. Demographic association are mostly non-modifiable factors which needs to be tailored properly keeping in mind with locally prevalent geographical scenarios otherwise any institutional or universal policy or SOPs will be futile.

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