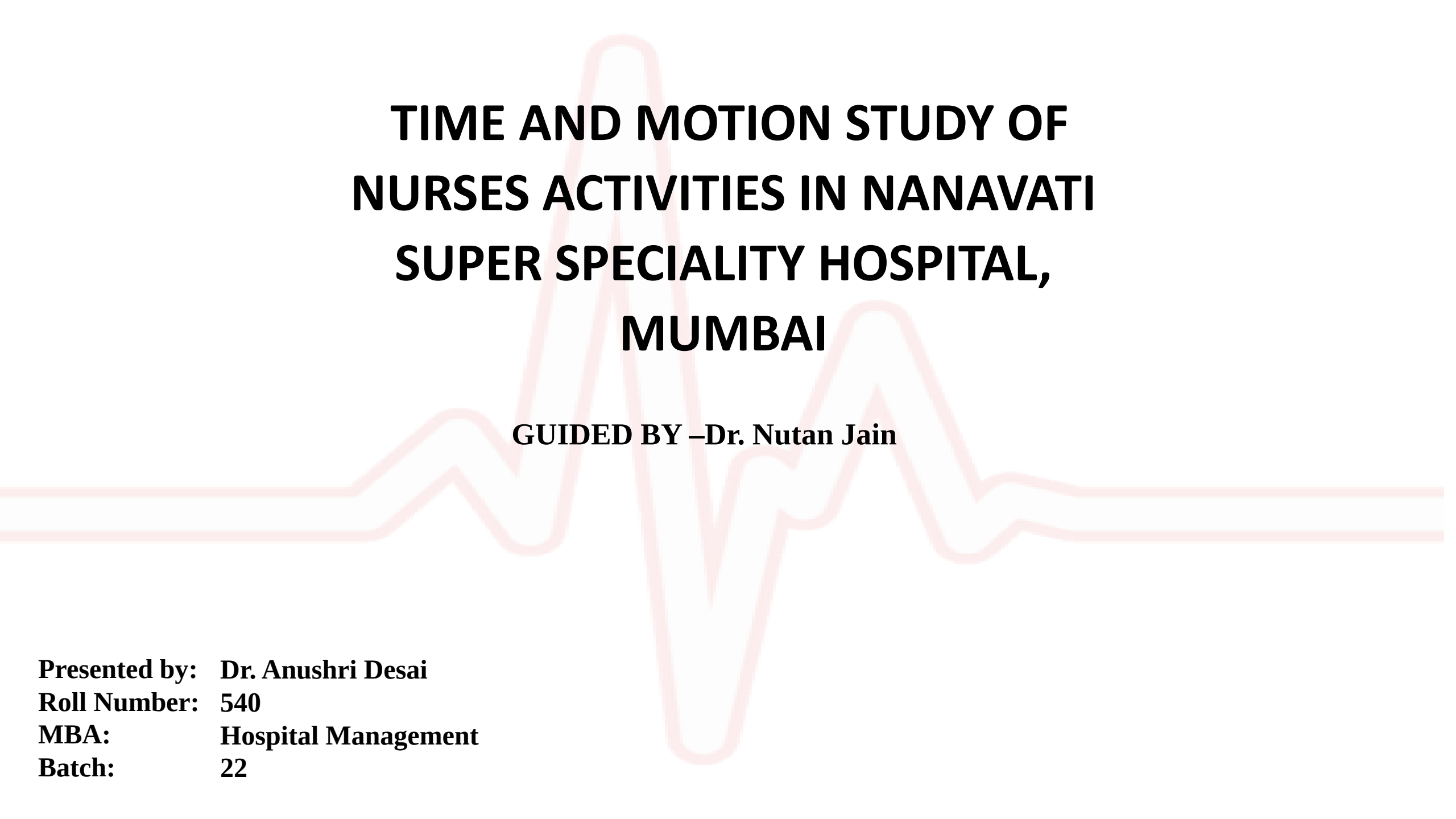




TIME AND MOTION STUDY OF NURSES ACTIVITIES IN NANAVATI SUPER SPECIALITY HOSPITAL, MUMBAI

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Introduction

- Nanavati Super Speciality hospital is a 350 bedded hospital with around 600 nursing staff. Nurses are the primary caregivers in a hospital.
- Nurses work in three shifts. Morning Shift (7 am to 3 pm), Evening Shift (2 pm to 10 pm) and Night Shift (10 pm to 8 am).
- Nurses are engaged in various clinical and non-clinical activities



Literature Review

Title	Authors	Objectives	Key findings
A 36-Hospital Time and Motion Study: How Do Medical-Surgical Nurses Spend their Time?	Ann Hendrich, Marilyn P Chow, Boguslaw A Skierczynski, Zhenqiang Lu Summer 2008	To document how nurses spend their time. To identify drivers of inefficiency in nursing work processes and nursing unit design.	A total of 767 nurses participated. More than three-quarters of all reported time was devoted to nursing practice. Three subcategories accounted for most of nursing practice time: documentation (35.3%; 147.5 minutes), medication administration (17.2%; 72 minutes), and care coordination (20.6%; 86 minutes). Patient care activities accounted for 19.3% (81 minutes) of nursing practice time, and only 7.2% (31 minutes) of nursing practice time was considered to be used for patient assessment and reading of vital signs.
How Do Nurses Spend Their Time in The Hospital?	Gholizadeh Masumeh, Janati Ali, Neda Kabiri, Batul Nadimi, Somayeh Abri 25 September,2013	To investigate the productivity of nurses in emergency department, ICU and CCU of Shahid-Madani hospital in Tabriz.	Fifty-seven work sampling data were collected, 15 through the observational study and 42 in self-reporting. Considerable differences were found in the nurses' time distribution between two techniques. Percentage of direct, indirect and personal activities in observational versus self-reporting were observed (32.74% versus 40.52%), (24.09% versus 28.84%) and (42.30% versus 30.41%) respectively

Title	Authors	Objectives	Key findings
A Time-Motion Study of Registered Nurses' Workflow in Intensive Care Unit Remote Monitoring	Zhihua Tang, Janine Mazabob, Liza Weavind , Eric Thomas and Todd R. Johnson 2006	To survey nurses' tasks in new critical care setting. To investigate the impact of the enabling technology on nurses' workflow.	The results showed that nurses essential tasks were centered on three themes: monitoring patients, maintaining patients health records, and managing technology use. In monitoring patients, nurses spent 52% of the time assimilating information embedded in a clinical information system and 15% on monitoring live vitals.
Care and noncare-related activities among critical care nurses: A cross-sectional observational time and motion study	Maryam Ahmadishad, Moh sen Adib-Hajbaghery, Mah boubeh Rezaei, Fatemeh Atoof, Esther Munyisia. December 9 ,2018	To measure care and noncare-related activities among critical care nurses and to determine their contributing factors.	The duration of nurses' care-related activities (249.10 ± 65.00 min, i.e., 69.2% of a 6-h shift) was significantly more than the duration of their noncare-related activities (111.00 ± 48.30 min, i.e., 30.8% of a 6-h shift). Respecting care-related activities, participants spent 53.5% of their time on direct care and the rest 46.5% on indirect care; whereas respecting noncare-related activities, they spent 76.5% of their time on personal activities (such as making personal calls) and the rest 23.5% on unit related tasks. The duration of nurses' activities had significant relationships with their unit, nurse–patient ratio, and patients' age, gender, and diagnosis.



Research Question

How do nurses distribute their time across various activities during their working hours from entry to exit?



Objectives

- To study daily routine of nursing staff by time spent on each of the activities during their working hours from entry to exit
- To find out appropriateness of time spent on each activity with reference to guidelines of the hospital
- To suggest ways to remove any gaps in time if present with reference to the hospital guidelines.



Methodology

- **Study Design:** Observational Descriptive
- **Study Population:** Staff nurses from 1 Special ward and 3 general wards

WARDS	TOTAL STAFF NURSES IN ONE SHIFT IN A DAY	TOTAL STAFF NURSES IN THREE SHIFTS IN A DAY	#NURSES OBSERVED
1 SPECIAL WARD	6	18	21*
3 GENERAL WARDS	9 (3)	27 (9)	9
STUDY POPULATION		45	30

*Three nurses were deputed from other wards



contd....

Inclusion Criteria

Staff nurses in the shift of 7 am to 3 pm present in the ward on the day of the study and who were **willing to participate** were included in the study.

Exclusion Criteria

Sister In-charge and Team leader were excluded as their work involves monitoring staff nurses and other ward activities, **newly joined employees** with experience of 0 -6 months were excluded from the study as they were not fully oriented to the ward activities, those nurses **who did not give consent** were not included in the study



Data Collection Checklist

1. Indirect Patient Care	Time Spent in mins
Inventory check	
Medicine Preparation	
Taking medicines from store	
Removing medicines from shelves	
Other	
TOTAL	
2. Direct Patient Care	
Medicine administration	
Recording Patient vitals	
Assisting consultants in rounds	
Giving saline	
Recording height and weight	
Putting IV	
Sponging	
Other	
TOTAL	
3. Communication	
Doctor	
Nurse	
Assistant	
Housekeeping	
Answering phone calls	
Other	

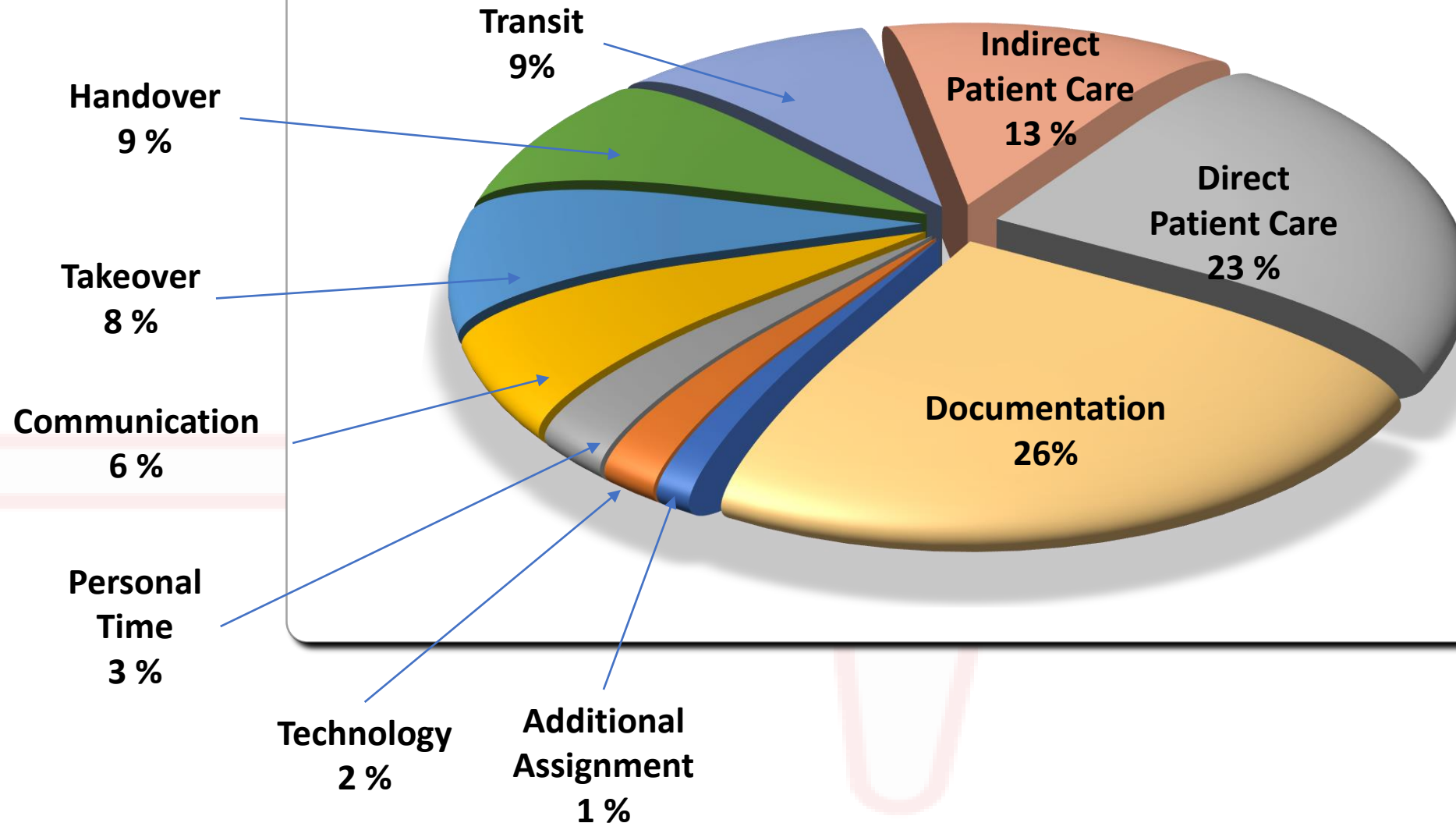
TOTAL	
4. Technology	
Use of PC	
Other	
5. Documentation	
Daily assessment	
Medicine	
Nursing notes and plan	
TOTAL	
6. Transit	
Travelling from patient bed to Nursing station	
Travel to OT/ other ward	
TOTAL	
7. Takeover	
8. Personal time	
9. Took another staff assignment	
10. Handover to next shift staff and over to Team Leader	
11. Searching for patient file/other	
TOTAL	

Following Informed consent, Staff Nurses were observed between 7 am to 3 pm shift and time spent was recorded on a minute by minute basis.



KEY FINDINGS

% distribution of nurses time by various activities



ACTIVITY	Time Spent in mins/ 30	Average (minutes)	Proportion of total time
1.Indirect Patient Care			
Inventory check	1016	34	6
Medicine Preparation	539	18	3
Training/attending ppt	67	2	0
Taking medicines from store and replacements	244	8	2
Removing medicines from shelves	218	7	1
TOTAL	2084	69	13
2.Direct Patient Care			
Medication administration	1220	41	8
Recording Patient vitals	780	26	5
Assisting consultants in rounds	440	15	3
Giving saline	287	10	2
Recording height and weight	513	17	3
Sponging	159	5	1
Putting IV	276	9	2
TOTAL	3675	123	23

3.Communication	Time Spent in mins/ 30	Average (minutes)	Proportion of total time
Doctor	346	12	2
Nurse	226	8	1
Assistant	100	3	1
Housekeeping	141	5	1
Answering phone calls	203	7	1
TOTAL	1016	34	6
4. Technology- Use of PC	331	11	2
5.Documentation			
Daily assessment	1413	47	9
Medicine	1108	37	7
Nursing notes and plan	1500	50	9
TOTAL	4021	134	25

	Time Spent in mins/ 30	Average (minutes)	Proportion of total time
6.Transit			
Travelling from patient bed to Nursing station	952	32	6
Travel to OT/ other ward	537	18	3
TOTAL	1489	50	9
7.Takeover	1290	43	8
8.Personal time	442	15	3
9.Took another staff assignment	200	7	1
10.Handover to next shift staff and over to TL	1435	48	9
11.Searching for patient file/other	81	3	1
TOTAL	16064	537	100.0

ACCORDING TO HOSPITAL GUIDELINES, STANDARD TIME TAKEN FOR ACTIVITIES IN 8 HOURS SHIFT IN MINUTES V/S ACTUAL TIME RECORDED

ACTIVITY	STANDARD	ACTUAL	DIFFERENCE
1.Indirect Patient Care	75	69	-6
2.Direct Patient Care	150	123	-27
3.Communication	25	34	+9
4.Technology	10	11	+1
5.Documentation	120	134	+14
6.Transit	15	50	+35
7.Takeover	30	43	+13
8. Personal time	15	15	0
9.Took another staff assignment	-	7	
10.Handover to next shift staff and over to TL	40	48	+8
11.Searching for patient file/other	-	3	
TOTAL	480	537	

Use of PC	7	FALSE
Use of PC	8	FALSE
Use of PC	12	FALSE
Use of PC	14	FALSE
Use of PC	17	FALSE
Use of PC	11	FALSE
Use of PC	2	FALSE
Use of PC	11	FALSE
Use of PC	9	FALSE
Use of PC	9	FALSE
Use of PC	5	FALSE
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Use of PC	6	FALSE
Use of PC	6	FALSE
Use of PC	18	FALSE
Use of PC	8	FALSE
Use of PC	9	FALSE
Use of PC	13	FALSE
Use of PC	14	FALSE

- Mean, standard deviation and were calculated to check for normality. There are no outliers in this data hence the result is false.
- The entire data was tested for normality in the similar way and was found to follow normality

CALCULATION OF OUTLIERS AND NORMALITY

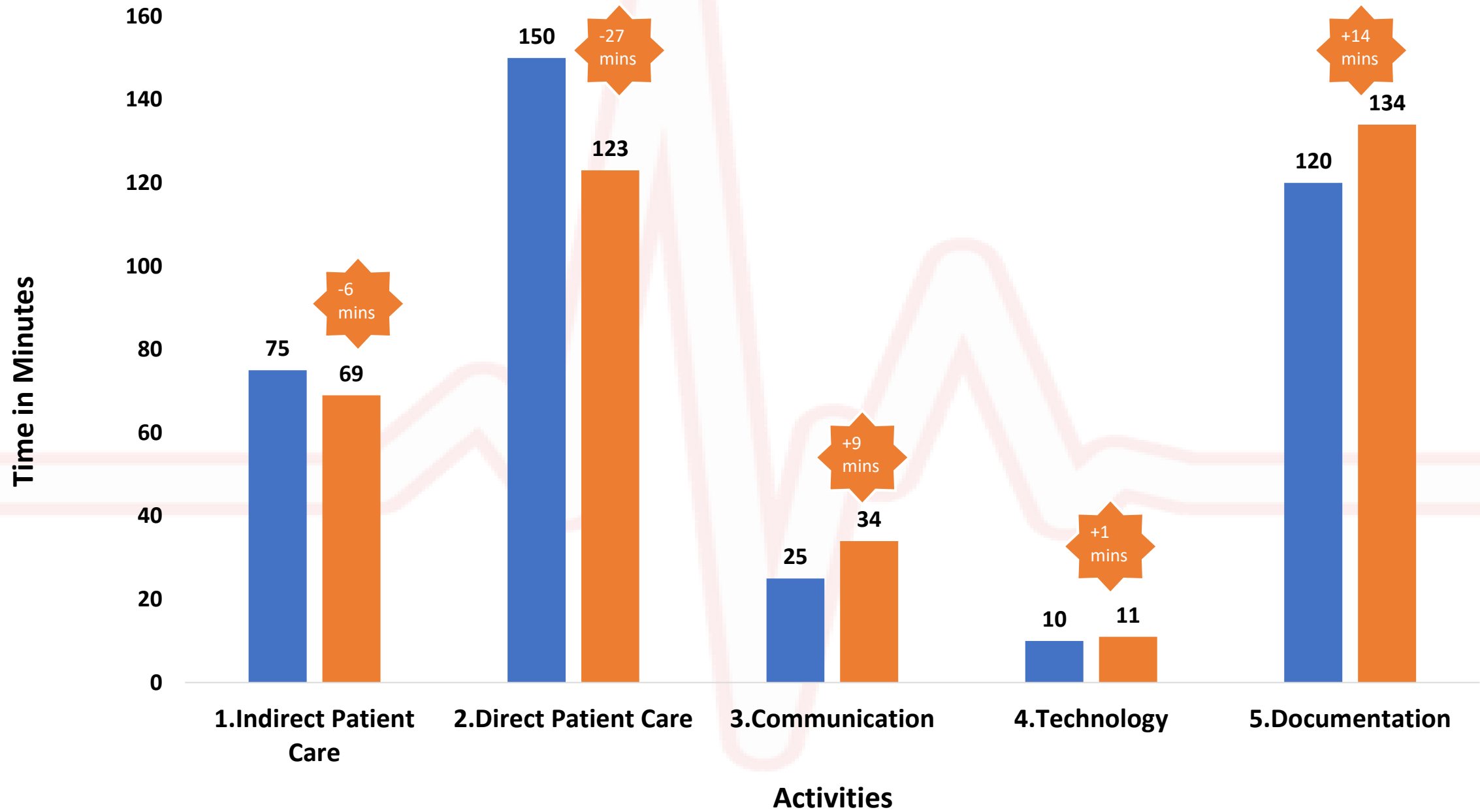
QUARTILE 1	7
QUARTILE 3	15.25
INTERQUARTILE RANGE	8.25
UPPER BOUND	27.625
LOWER BOUND	-5.375

Upper bound= Quartile 3 + (1.5* Inter Quartile range)
Lower bound= Quartile 1- (1.5* Inter Quartile range)

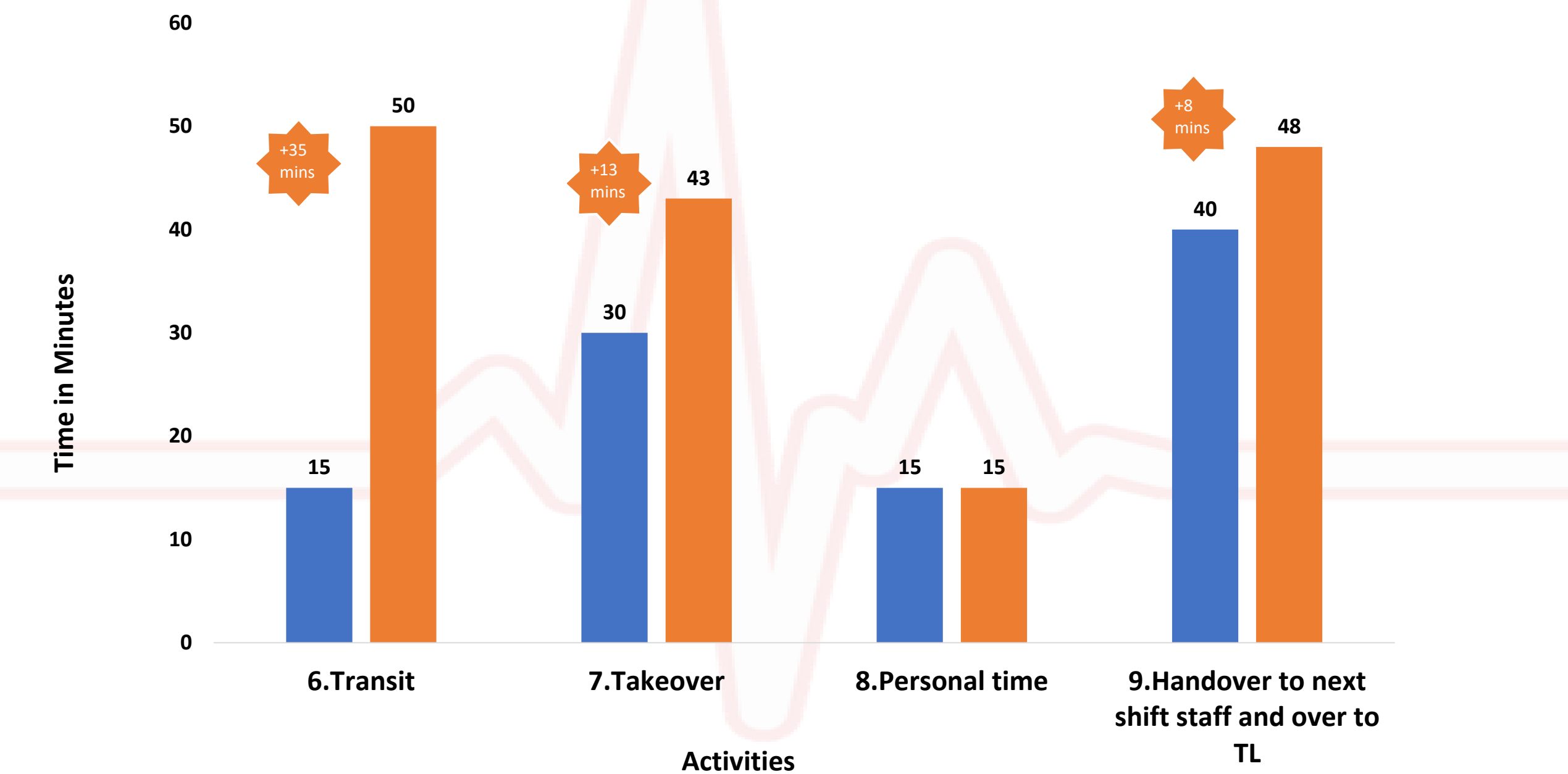
ACTIVITY	STANDARD DEVIATION	MEAN	MIN	MAX	RANGE
USE OF PC	5.33	11.36	2	24	22

EXAMPLE FOR CALCULATION OF OUTLIERS AND NORMALITY

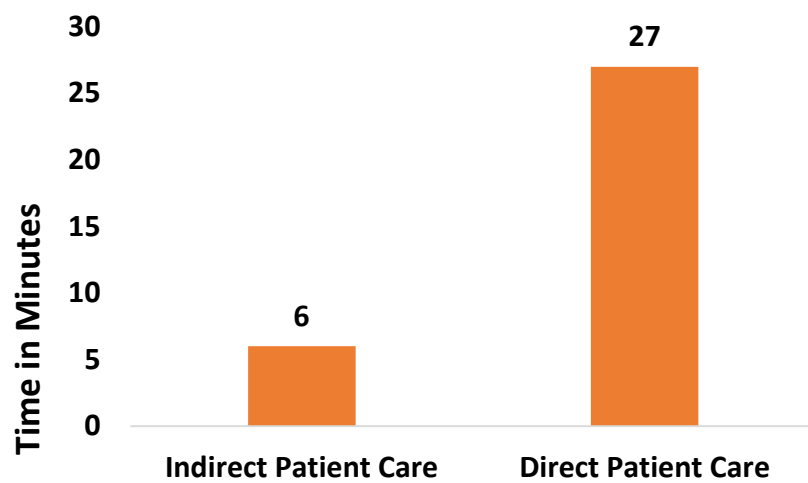
STANDARD V/S ACTUAL TIME TAKEN BY ACTIVITIES



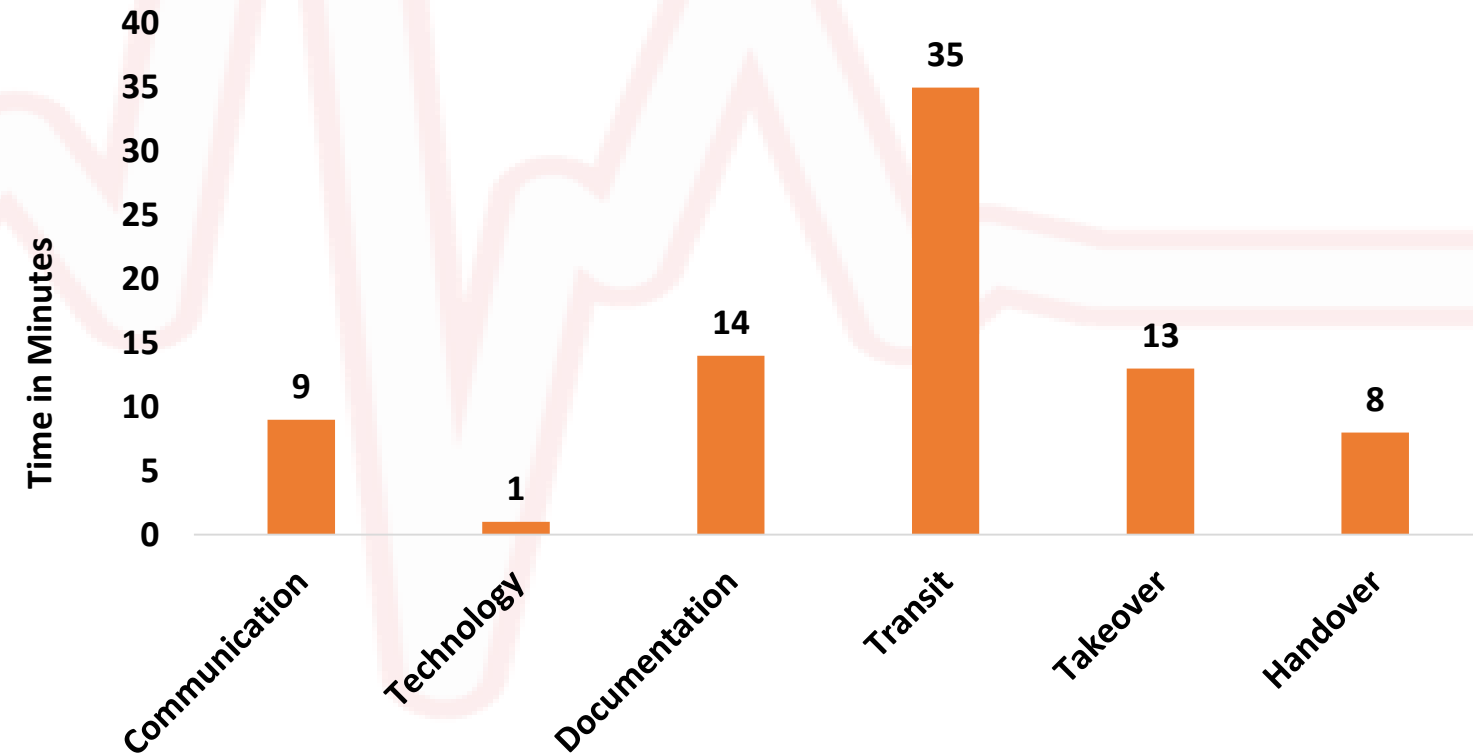
STANDARD V/S ACTUAL TIME TAKEN BY ACTIVITIES



SHORTAGE OF TIME SPENT IN MINUTES FOR ACTIVITIES

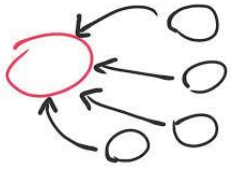


EXCESS OF TIME IN MINUTES SPENT IN ACTIVITIES



Concerns for deviations from the standard time taken by possible reasons and suggestions for managing time

CONCERNS	REASONS	SUGGESTIONS
Less time devoted to Direct – Indirect Patient Care	Transit takes 35 minutes more because the patient handing over to the other points of care takes more than desired time because other staff do not entertain them and they can not leave the patient alone	Prior information and coordination with the other points of care should be done over telephone Nearest Patient assignment may help
Documentation	14 more minutes are spent on documentation	e-documentation may help time management



Conclusion

- One-tenth of time was spent on transit which can be managed by prior communication and coordination with the other points of care over telephone
- e documentation may help in reducing time and may give scope to increase direct and indirect patient care.
- Trained assistants may be prepared for some activities which can be done by them after adequate training



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Thank
You!