

A TIME-MOTION STUDY OF OPD SERVICES AT A STATE LEVEL AYURVEDIC HOSPITAL TO REDUCE THE OPD CONGESTION

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ABSTRACT

OPD congestion and long waiting time in OPD is an important managerial challenge in hospitals. Time motion study was conducted in a large referral *ayurvedic* hospital in capital region by direct observation technique. Average waiting time taken at various stations was observed and statistically analysed. Exit interview by patients was also conducted. Results were analysed and suggestions were given to management for implementation in order to reduce OPD congestion.

Keywords: OPD congestion, waiting time in hospital OPD, Time motion study in OPD.

INTRODUCTION

Hospital management is not a new term for *Ayurveda*. *Acharya Charak* and *Sushruta* both have clearly described about hospital (*Aturalaya*) planning, structure, equipment and material procurement (*agropaharniya*), medical quality control (*Chikitsa Chatushpad*), human resource management and so many aspects of hospital management at different places in their text i.e. *Charak Samhita* and *Sushruta Samhita*. Management in *ayurvedic* hospital has same place of importance as in allopathic modern hospital. Outpatient department (OPD) of an *ayurvedic* hospital is very important place. OPD caters different types of patients that need to be properly managed in terms of patient satisfaction and care. OPD is considered as the window to hospital services and a patient's impression of the hospital begins at the OPD. This impression often influences the patient's sensitivity to the hospital and therefore it is essential to en-

sure that OPD services provide an excellent experience for patients. OPD congestion is one of the most difficult problems of management. Many studies regarding OPD congestion have been published. Still, waiting time in OPD and reduction of OPD patient congestion is a difficult issue of hospital administration. Queuing theory has been adopted as a solution. Study shows that when the number of server is below a certain threshold, clinic develops an infinite queue, when it is slightly above the threshold, waiting time and queues are lower. A good balance between the number of doctors, costs and optimal system performance is important for sustainability [1]. One of the studies conducted in a tertiary care centre in India shows that appointment of primary care physician for screening of patients reduces the congestion and waiting time [2]. Six sigma approaches can curtail significant reduction in waiting time in Outpatient de-

partment [3]. Congestion problem in OPD also varies according to the nature of specialty of that hospital. Such as an ophthalmic OPD has long waiting time as there are so many different procedures, tests, examinations etc. at various stations. So planning of OPD management should be done accordingly [4]. Sometimes a very little problem and its small solution reflects a significant result in reducing waiting time in OPD, such as tea breaks by staff, hospital uniform, hospital signage, nearby neat and clean toilets etc. [5]. Vijaya B. (1999) has given an analogy between Congestive cardiac failure and OPD congestion. They have given the solution of OPD congestion in same way as of the line of treatment of CCF [6].

This study, conducted in a well-established good running *Ayurvedic* hospital in capital region, is a time motion study to reduce the OPD congestion and waiting time.

AIMS AND OBJECTIVES

Aims: To study the present organization of OPD services of *Ch. Brahm Prakash Ayurved Charak Sansthan* –Hospital Block. To conduct a time motion study to assess the average waiting time of patients, average time consumed in queuing at various levels such as registration, consultation, pathology, radiology, pharmacy etc.

Objectives: To identify the short comings at various levels leading to such congestion and to suggest various means to reduce congestion in OPD

Scope: The primary activity of *Ch. Brahm Prakash Ayurved Charak Sansthan* is providing *ayurveda* consultation, diagnostic and *ayurvedic* treatment services and also specialized accommodation services to in-patients i.e., receiving individuals for medical reasons, providing them with *ayurvedic*

care on an on-going basis and offering diagnostic and treatment services.

Methodology: This is a direct observational prospective study in which the organization of OPD service of *Ch. Brahm Prakash Ayurved Charak Sansthan (CBPACS)*, *Khe-ra Dabar, Najafgarh*, and New Delhi has been observed and time taken by a patient at each counter is recorded by a stop watch. This is a Time-Motion study, conducted in the OPD section of hospital. The direct observation method was used to study the waiting time at each and every station of hospital catered to patient in daily routine practice.

STUDY DESIGN: In present study, the two types of research work were done on waiting time and OPD congestion. First approach was from observer side to note down the exact time at which the particular patient was reached at a particular counter, without knowing to the staff assigned at that particular counter. In the second approach, the same patient was interviewed through a questionnaire prepared by the researcher focusing the feedback of patient in relation to the waiting time at each counter. Suggestion was also asked from patient side to reduce OPD congestion and waiting time.

TIME-MOTION STUDY: Time was directly noted and observed at each and every station by observer with the help of a same functioning watch, having least count of one second. Time difference was calculated and analyzed for every counter.

A. QUESTIONNAIRE DESIGN:

Proper care had been taken to ensure that the information needs match the objectives which in turn match the data collected through the questionnaire. The basic cardinal rules of Questionnaire design like using

simple and clear words, the logical and sequential arrangement of questions had been taken care of.

SOURCE OF DATA:

Primary source:

A. For Time motion study:

Through direct observation of OPD functioning and recording of the time taken by a patient at each counter

B. For Patient interview:

The primary data was collected through an administered Questionnaire. The Questionnaire consisted of a variety of questions that lay consistent with the objectives of the research.

Secondary source: The advertisements published by the hospital, the catalogues, brochures, website of the organization served as secondary sources of data.

Sample size: 30 patients were selected for this study, who was attending OPD first time. Daily two patients, who arrived in between 9 am to 10 am at registration counter

as a new patient, were identified and studied directly by observer. Time was monitored with the help of stop watch function of mobile phone.

Study period: One month; i.e. from 15-04-2015 to 14-05-2015.

Sample selection: Random

DATA ANALYSIS

After the data collection process, errors, omissions and other ambiguities was sort out and Frequency tabulations were drawn to count the number of cases that fall into various categories and descriptions about the variables was made from the frequency tabulation. Summary or descriptive statistics particularly cross tabulation with percentages was used. Microsoft Office Excel 2007 software was used for tabulation and statistical analysis.

Observation

(1) TIME-MOTION STUDY

(a) STUDY OF WAITING TIME AT RECEPTION COUNTER

S.no.	Arrival	Exit	Time taken	S.no.	Arrival	Exit	Time taken
1	9:01:21	9:12:45	0:11:24	16	9:29:51	9:30:47	0:00:56
2	9:02:21	9:15:54	0:13:33	17	9:26:45	9:35:46	0:09:01
3	9:04:21	9:16:43	0:12:22	18	9:45:21	10:13:22	0:28:01
4	9:23:39	9:38:12	0:14:33	19	9:39:09	9:57:15	0:18:06
5	9:25:12	9:28:03	0:02:51	20	9:50:00	9:58:28	0:08:28
6	9:42:15	10:02:08	0:19:53	21	9:19:00	9:32:45	0:13:45
7	9:37:36	9:44:55	0:07:19	22	9:31:24	9:35:38	0:04:14
8	9:43:48	9:45:39	0:01:51	23	9:32:57	9:35:38	0:02:41
9	9:28:18	9:35:13	0:06:55	24	9:51:33	10:00:39	0:09:06
10	9:46:54	9:59:40	0:12:46	25	9:20:33	9:26:34	0:06:01
11	9:34:30	9:42:19	0:07:49	26	9:36:03	9:44:07	0:08:04
12	9:40:42	10:04:23	0:23:41	27	9:28:18	9:29:59	0:01:41
13	9:22:06	9:40:23	0:18:17	28	9:37:36	9:39:45	0:02:09
14	9:48:27	10:02:14	0:13:47	29	9:31:24	9:42:49	0:11:25
15	9:17:27	9:28:26	0:10:59	30	9:40:42	9:56:51	0:16:09

						Mean Waiting Time at Reception counter=	0:10:36
						SD=	±0:06:44

Mean waiting time at reception counter for the process of registration is calculated **10**

MINUTES 36 SECOND ± 6 MINUTES 44 SECOND.

STUDY OF WAITING TIME IN OPD

S.n o.	Arrival	Entry in OPD	Time taken	S.no.	Arrival	Entry in OPD	Time taken
1	9:13:05	10:28:36	1:15:31	16	9:31:49	10:58:34	1:26:45
2	9:16:34	10:37:41	1:21:07	17	9:36:39	11:14:37	1:37:58
3	9:18:01	10:30:28	1:12:27	18	10:14:59	11:35:32	1:20:33
4	9:40:03	10:59:03	1:19:00	19	9:58:37	11:16:03	1:17:26
5	9:29:45	10:46:33	1:16:48	20	9:59:04	11:28:35	1:29:31
6	10:04:19	11:15:43	1:11:24	21	9:35:57	10:47:02	1:11:05
7	9:45:59	11:10:41	1:24:42	22	9:37:49	10:58:43	1:20:54
8	9:47:23	11:21:33	1:34:10	23	9:37:38	10:56:29	1:18:51
9	9:37:10	10:47:27	1:10:17	24	10:01:00	11:08:28	1:07:28
10	10:01:02	11:32:57	1:31:55	25	9:28:32	10:08:23	0:39:51
11	9:43:45	11:15:39	1:31:54	26	9:45:09	10:36:03	0:50:54
12	10:06:04	11:40:36	1:34:32	27	9:31:21	10:26:12	0:54:51
13	9:41:37	10:59:02	1:17:25	28	9:41:37	11:16:02	1:34:25
14	10:03:55	11:28:43	1:24:48	29	9:45:51	10:44:23	0:58:32
15	9:29:00	10:46:13	1:17:13	30	9:58:29	11:17:39	1:19:10
						Mean Waiting Time in OPD=	1:17:43
						SD=	±0:13:33

Mean waiting time at OPD waiting lounge from arrival to entry in OPD for consultation

is calculated **1 HOUR 17 MINUTES 43 SECOND ± 13 MINUTES 33 SECOND.**

(a) STUDY OF CONSULTATION TIME IN OPD

S.n o.	Entry in OPD	Exit from OPD	Time taken	S.n o.	Entry in OPD	Exit from OPD	Time taken
1	10:28:36	10:30:32	0:01:56	16	10:58:34	11:03:54	0:05:20
2	10:37:41	10:38:25	0:00:44	17	11:14:37	11:17:56	0:03:19
3	10:30:28	10:34:19	0:03:51	18	11:35:32	11:38:32	0:03:00
4	10:59:03	11:03:24	0:04:21	19	11:16:03	11:19:52	0:03:49

5	10:46:33	10:49:21	0:02:48	20	11:28:35	11:32:53	0:04:18
6	11:15:43	11:18:27	0:02:44	21	10:47:02	10:53:25	0:06:23
7	11:10:41	11:15:02	0:04:21	22	10:58:43	11:05:06	0:06:23
8	11:21:33	11:22:59	0:01:26	23	10:56:29	10:59:38	0:03:09
9	10:47:27	10:52:41	0:05:14	24	11:08:28	11:13:49	0:05:21
10	11:32:57	11:36:45	0:03:48	25	10:08:23	10:13:47	0:05:24
11	11:15:39	11:18:34	0:02:55	26	10:36:03	10:40:32	0:04:29
12	11:40:36	11:44:15	0:03:39	27	10:26:12	10:30:35	0:04:23
13	10:59:02	11:05:19	0:06:17	28	11:16:02	11:19:00	0:02:58
14	11:28:43	11:30:28	0:01:45	29	10:44:23	10:49:03	0:04:40
15	10:46:13	10:48:28	0:02:15	30	11:17:39	11:22:34	0:04:55
						Mean Consultation Time=	0:03:52
						SD=	±0:01:28

Mean time for OPD consultation, calculated as per the data observed is **3 MINUTES 52 SECOND ± 1 MINUTE 28 SECOND.**

STUDY OF WAITING TIME IN PATHOLOGYLAB

S.no	Arrival	Call for sampling	Time taken	S.no.	Arrival	Call for Sampling	Time taken
1	10:36:29	10:46:27	0:09:58	16	-	-	-
2	-	-	-	17	-	-	-
3	10:41:28	11:02:57	0:21:29	18	-	-	-
4	-	-	-	19	-	-	-
5	10:54:51	11:10:28	0:15:37	20	-	-	-
6	-	-	-	21	10:55:59	11:20:38	0:24:39
7	-	-	-	22	-	-	-
8	-	-	-	23	-	-	-
9	10:56:11	11:04:29	0:08:18	24	-	-	-
10	-	-	-	25	10:22:58	10:25:31	0:02:33
11	-	-	-	26	10:44:29	11:03:47	0:19:18
12	-	-	-	27	10:33:24	10:40:39	0:07:15
13	-	-	-	28	-	-	-
14	-	-	-	29	10:52:37	11:12:28	0:19:51
15	10:51:41	11:15:26	0:23:45	30			
						Mean waiting time	0:15:16
						SD	±0:07:44

(2) PATIENT INTERVIEW

Q.1 How was your experience in “queue at Registration counter”?	Very Poor	Poor	good	very good	unsatisfactory
	0	5	11	12	3
Q.2 “Time taken in registration queue” was___according to you?	Very quick	normal	slow	very slow	unbearable
	3	11	8	7	1

Q. 3 How was the “queue at Registration counter” going according to you?	Fast	normal	slow	very slow	unbearable
	4	11	10	3	2
Q. 4 How was your experience regarding time taken during “waiting in OPD”?	quick	normal	slow	very slow	unbearable
	0	2	6	15	7
Q. 5 How was the turn of OPD consultation, according to you?	quick	normal	slow	very slow	unbearable
	2	6	13	8	1
Q. 6 How much time for consultation by Doctor has been given, according to you?	very less	less	normal	sufficient	more than sufficient
	0	1	8	16	5
Q. 7 Time consumed at pharmacy counter was....? According to you..	very less	less	normal	much	very much
	6	11	7	5	1
Q. 8 How much time was given by Pharmacist to explain dose and method of drug intake, according to you?	very less	less	normal	sufficient	more than sufficient
	2	11	13	4	0
Q.9. Whether, any pathological investigation was advised to you by consulting doctor? If yes, how was your experience in Lab in terms of waiting time?	very less	less	normal	much	very much
	8	16	6	0	0
Q.10. Whether, any X-ray was advised to you by consulting doctor? If yes, how was your experience in X-ray department in terms of waiting time?	very less	less	normal	much	very much
	0	4	10	12	4
Q. 11. How was your overall experience in hospital in terms of waiting time at various places since your arrival?	very poor	poor	good	very good	excellent
	0	7	14	6	4

Finding

30% of Patients were in the age group of 30-40 years of age, while 36% were of 50-60 years of age. So, it can be considered that the most of the people were belonging to highly mature as well as young age group.

As per the sex ratio of subjects is concerned, 40 % were male, while rest 60% were female.

Distribution of patients in different OPD was smooth and unbiased as it can be clearly seen in the graph having almost equal distribution in OPDs.

Patients' Demography

37% patients were graduate and 20% were falling in highest income group i.e. more than 5 lakhs, while 67% were having no income. These 67% belongs to house wives and students.

Registration: In this study, mean registration time was calculated as 10 min 36 sec ± 6 min 44 sec. Experience in registration area was very good by 39% , good by 35%, poor by 16% and 10% told it was unsatisfactory.

It was normal according to 37% people and 33% persons told that queue was going slow.

There is scope of improvement as few people are still unsatisfied by waiting in queue for registration.

OPD: Mean Waiting time in OPD area for their turns, is very high, i.e. 1 Hour, 17 min, 43 sec \pm 13 min 33 sec. 50% of patient told that OPD was running very slow, while 43% people notified that patient turnover rate was slow. According to 53% people, it was observed that doctor was giving sufficient time to patients, while 17% admitted that this time was more than sufficient.

In this real time study, average consultation time was observed 3 min 52 sec \pm 1 min 28 sec.

Pathology Lab: Here, mean waiting time was 15 min 10 sec \pm 7 min 44 sec. and according to 37% patients, less time consumed in lab.

X-ray department: Mean waiting time was 22 min 45 sec \pm 10 min 14 sec. and according to 40% patients, much time was consumed there.

Pharmacy: Average time consumed at pharmacy counter was 11 min 52 sec \pm 7 min 17 sec. and according to 37% patients, less time consumed in taking medicine from counter. 37% patients admitted that less time was given to them by pharmacist to tell about dosage, preparation and administration of *ayurvedic* drug.

SUGGESTIONS

A. Registration

1. Need of HELP DESK

Establishment of Help Desk will be a great help for catering the people, who are

helpless and confused about the exact direction of different counters.

2. More efficient use of Signage

Signage of hospital block is very old. As there are new additions and deletions of services in hospital, new and better signage will definitely help new patients. This will reduce congestion like situation in corridor.

3. Space Management-Shifting of Registration counter

Space in front of registration counter is very small. Due to this small space, there is heavy congestion in morning time. If registration counter will shift to some other suitable place, like in Emergency Hall which is presently used as Yoga room, there will be a great relief in congestion in this area. Yoga room may be shifted to first floor at large area beside physiotherapy room.

This change will also create unidirectional flow of patients in OPD corridors.

4. Online or Mobile app for Registration

Hospital may also start an online channel for OPD appointments. This will reduce congestion in OPD and waiting time of patients.

B. OPD

1. Display system

Token display system is used for queue management in OPD. But, sometimes there are few electrical problem creates mismanagement like situation in OPD. Early trouble shooting from electrical department may avoid it.

A large size plasma TV in central waiting area may be used to display all OPDs status. Display system of availability of doctors and medicines should be there in reception area. In case of leave or some other condition, display of status of that particular situation

will be highly helpful. This will help them to choose the specific time to visit hospital.

2. Proper time slot for VIP/Staff patients

There should be a proper slot for such patients. This timing should be fixed by doctor and patient mutually.

3. Proper time slot for entertaining Medical Representatives

Time slot should be declared and displayed for this purpose.

4. Arrangement of proper facility for examination

Examination facility should be present inside the OPD itself and one attendant may be used to assist doctor. This will reduce the unnecessary absence of doctor from OPD.

5. Sitting arrangement & arrangement of tea, coffee, newspaper, magazine, television etc in OPD waiting area

Sitting arrangement in OPD waiting area is very less as compare to the rush present in OPD. Proper arrangement for patients will definitely delight them.

6. Specialist OPD & Evening OPD

Arrangement of specialist OPDs will reduce OPD congestion by diverting specific types of patients toward a particular area at a particular time.

7. Screening OPDs

There should be an arrangement of screening OPD in each department to scrutinize the patients.

8. Intra-departmental Referral System

Intra-departmental Referral System in this hospital is very poor. All doctors are getting here similar treatment. There should be clear cut strata differentiation in each department. This will not only reduce idle time of doctors but also improve waiting time of patients.

C. Pathology Lab

1. Waiting time in pathology lab for sampling is very less. This is good but we can again improve it by improving early report delivery. This can be achieved by adopting mobile SMS service, Whats app, email, website, mobile application etc.
2. Report delivery in printed form will be appreciated by patients.

D. X-ray Department

Waiting time in x-ray department is also less and reasonable. But again it can also be improved by early report delivery.

E. Pharmacy

1. Token Display system:

Waiting time in Pharmacy can be reduced by using different token display system. We can implement a system like that of a Piza/Burger shop in catering our patients.

2. Display of videos of ayurvedic drug preparation and usage at pharmacy counter

Proper display of videos of preparation of *ayurvedic* decoction (*kadha*), ointment (*lepa*), syrups (*asawa-arishta*) and their usage like nasal route (*nasya*), rectal route (*basti*) etc will be highly helpful to understand *ayurvedic* therapies. This will shorten the time of explanation in pharmacy and will also educate and guide patients.

CONCLUSION

The study “To study the organization of OPD service at Ch. Brahm Prakash Ayurved Charak Sansthan-Hospital, Najafgarh, and to carry out a time-motion study to reduce the OPD congestion” has brought to the surface certain grey areas where the hospital needs to pay attention. It has also revealed certain things which the hospital can feel good

about. Cleanliness of the hospital, Adherence to appointments, canteen facilities, waiting time, reception arrangements have long been the mantra for satisfying the patients and visitors who come to CBPACS, apart from the diagnosis and treatment.

CBPACS has to mainly focus on the “patients’ satisfaction” as this is the most important criterion to be met if more people are to be drawn into the hospital. There is a general perception that taking treatment at CBPACS is a time consuming affair which is to be eradicated. Less waiting time and less congestion in OPDs should be an integral identity of this *Sansthan*. The responsibility vests on the Administrative Department to highlight the hospital as one in which ‘High Quality Care with Low waiting time” (**Time is precious, and we understand this**). This could be adopted as the Institution motto. Continuous feedback from patients about waiting time at various specialties offered should be undertaken.

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