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Original Research Article

The time motion study of an out-patient department in a tertiary care hospital in Tamil Nadu

S. Karthikeyan*, T. Palanivel Rajan, J. E. Jeffin Shanu, S. Pandi

[1]Department of Community Medicine, Government Medical College, Pudukottai, Tamil Nadu, India
[2]Department of Community Medicine, Trichy SRM Medical College Hospital and Research Centre, Irungalur, Tiruchirappalli, Tamil Nadu, India

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***Correspondence:**
Dr. S. Karthikeyan,
E-mail: kartswam@yahoo.com

ABSTRACT

Background: The time taken by the patients during their visit to the hospital out-patient department (OPD) at various service delivery points, the time motion study and by assessing the patient satisfaction regarding the hospital out-patient department, the present study was conducted. This study established the clinical workflow of various events and the operational efficiency of the out-patient department in a busy tertiary care hospital in Tamil Nadu.
Methods: The data pertaining to the time motion study was recorded in hours, minutes and seconds. The patient satisfaction questionnaire (PSQ-10 item questionnaire) was requested by interviewing the patients. The data was statistically analyzed using Microsoft Excel and the SPSS v26.0.
Results: The maximum time spent was at the investigation counter 00:15:12 and SD was ±00:08:56. The total average waiting time spent during the hospital visits was 00:32:25±00:18:17. The patient satisfaction questionnaire revealed that the overall satisfaction was found to be good in 38 (62.3%) and excellent in 10 (16.4%).
Conclusions: The time spent at the investigation counters which was at the peak can be reduced by prioritization and faster case work-up. The staffing pattern was adequate except on government holidays, there were no particular delay in the OPD care setting.

Keywords: Out-patient department, Patient satisfaction questionnaire PSQ-10, Tertiary care hospital, Time motion study

INTRODUCTION

Time study work of Frederick Winslow Taylor initially originated with the motion study work of Frank B. Gilbreth and Lillian Gilbreth.[1] The out-patient department is quite well structured and elaborate with faculties, medical officers and nursing staff.[1] The OPD in this study was well established in comparison to many hospitals including the governmental institutions. The average turnover of our OPD is around 150 patients every day.[1] Time and motion study is essentially a business efficiency technique. Recently, many hospitals around the world have already started using time motion studies to improve their work and efficiency.[2] The time motion study often uses the systematic random sampling with the view that it could establish the operational efficiency of the hospital out-patient department. The time motion study can be done in each and every hospital in order to boost the positive image of the hospital.[2] Delays are expensive in terms of original costs incurred. The high costs, poor patient satisfaction and other adverse clinical outcomes could result from inappropriate time management. The Institute of Medicine recommended that at least 90% of the patients should be seen within 30 minutes of their scheduled appointment.[3] The OPD is the first point of contact and forms the main area of arrangement and understanding between the hospital staff and out-patients respectively.[4]

The time motion studies are relatively few in number; hence the present study was done in a busy tertiary care hospital in Tamil Nadu in the General Medicine OPD. The present study which is purely a time motion study based in tertiary hospital in Tamil Nadu. The main problems are based on queuing theory, time management skills, sequential analysis of clinical events and workflow pattern of the staff members at the various OPD counters.[5]

The time motion studies are defined as the sequential analysis of micro-events. It is one of the main analytical tools and a business efficiency strategy to improve the effectiveness of a procedure by minimizing the number of moves. The time motion study is usually done by using the stopwatch to record the time in hours, minutes and seconds to ascertain the physical movements from one point to the other. This concept was originally used in the industrial engineering to study the sequential analysis of various events, so that certain moves could be modified and result in time saving mechanisms. The best time saving pathway can be chosen, on comparison to the time-consuming ones.[5,6]

In the hospital care, this can be utilized to study the clinical workflow analysis and investigate the healthcare costs incurred and their workflow efficiency. The time motion studies done in the clinical set up could be an important factor for the healthcare utilization and services. This mainly depends on the doctor availability, nursing staff and the backup of out-patient department. The time and the motion popularly known as the time motion study can be done in any set up to understand the job fractionization concepts.[5,6] The time motion study considers the new and the old cases that attends the out-patient department; some of the studies had measured the time in seconds alone.

The time motion study could be done like a continuous observation process. A study that was done in the rural, Pune district, Maharashtra using four community health workers in the community mental health project (CMHP) monitored the CHWs on a continuous basis for a month from 09:00 AM till 03:00 PM for five days each over a period of one month. This study helped in identifying the inefficiencies that could reflect upon the health care services delivery through the CMHP.[7]

Aim and objectives

To assess the time spent by the out-patient department (OPD) patients at various service delivery points of the tertiary care hospital, with the following objectives:

To assess the average time spent in different service delivery points in the OPD area of a tertiary care hospital in Tamil Nadu.

To assess the patient satisfaction regarding the time spent in the OPD and the quality- of-service delivery in tertiary care hospital in Tamil Nadu.

METHODS

The time motion study is best done by the mixed method in which the time motion flow by using the stopwatch for the time calculation, the time spent at the various departments and then followed by a patient satisfaction questionnaire; usually, a ten item one which is pre-validated. The patient satisfaction questionnaire is also available in the form of 18 items and is more detailed. The seven dimensions of the PSQ-18 are the general satisfaction, technical quality, communication, interpersonal manner, financial aspects, the time spent in doctor consultation, convenience and accessibility.

The PSQ-18 was adapted from previous larger versions and improvised using Likert scales for better reliability and internal consistency.[8]

In our study, however, the PSQ-10 was used for better compliance and uniformity amongst the participants.

Study type and study period

It was a time motion study. This study was conducted for a period of 2 months (October to November 2022).

Study population

All patients coming to attend an out-patient department in the OPD area of tertiary care hospital based in Tamil Nadu.

Sample size

The hospital OPD turnover is around 150 patients every day; based on the previous hospital-based study in the rural OPD in West Bengal, sample size was calculated to be 60 after adjustment for the non-response rate of 10%.[1] The patients attending the OPD registration counter were given token numbers. All the study participants were unaware of the staff assigned to note down the time by using stopwatch at every counter viz out-patient department, pharmacy, lab investigations and imaging. After the first patient was selected by using the lot method by choosing a number between 1-10, every 25th patient was selected as per the OPD turnover of 150 patients every day in order to complete 5 participants per day until the required sample size of 60 was attained. The time of entry and exit at various counters were calculated using the stopwatch at every OPD counter by the observer.

At the exit point of the hospital entrance, all the study participants were interviewed after obtaining informed consent using a 10 item pre-tested: semi-structured patient satisfaction questionnaire (PSQ) with the 5-point scale.[1] The medical interns were trained to do the time of entry and exit at various points in the hospital counters in order to get a reliable estimation of time spent in those counters. The PSQ-10 questionnaire was used at the exit

point to establish the patient satisfaction response using the 5-point Likert scale. The integration of the above two techniques, the time motion and the patient satisfaction questionnaire, results in the accurate estimation of hospital congestion, efficient time management and appropriate functioning of hospital out-patient departments. The patients' interview- PSQ-10 were conducted along with the socio-demographic data during the exit. These data were entered numerically in hours, minutes and seconds along with the patient satisfaction questionnaire. The data was analyzed by Microsoft Office Excel 2007 software and SPSS V.26.0.

RESULTS

In the present study amongst the total 61 participants there were 41 (68.3%) males and 20 (32.7%) females. In the 20-40 years age group there were 30 (49.2%) individuals. In the 40-60 years age group there were 23 (37.7%) individuals. In the 60-80 years age group there were 8 (13.1%) individuals.

OPD registration counter

The average time spent at the OPD registration counter was 00:02:08 ±SD of 00:01:25. In the present study 40 (65.6%) individuals had satisfactory experience at the OPD registration counter. About 37 (60.6%) individuals felt that the pace of the registration queue was normal. The time taken at the OPD registration counter was found to be normal in 42 (68.8%) individuals (Table 1).

Table 1: Time spent at the OPD registration counter (n=61).

S. No.	Arrival time	Exit time at OPD registration counter	Time spent OPD registration	S. No.	Arrival time	Exit time at OPD registration counter	Time spent OPD registration
1.	10:40:30	10:41:50	00:01:20	32.	01:15:20	01:16:30	00:01:10
2.	11:37:00	11:38:00	00:01:00	33.	10:00:57	10:02:50	00:01:53
3.	11:59:00	11:59:45	00:00:45	34.	10:04:12	10:06:28	00:02:16
4.	02:00:00	02:02:00	00:02:00	35.	10:10:07	10:12:51	00:02:44
5.	10:08:00	10:09:00	00:01:00	36.	10:21:22	10:23:52	00:02:30
6.	10:08:00	10:10:00	00:02:00	37.	11:10:36	11:13:41	00:03:05
7.	10:30:00	10:31:00	00:01:00	38.	11:50:21	11:53:18	00:02:57
8.	11:00:00	11:01:20	00:01:20	39.	02:20:05	02:22:20	00:02:15
9.	12:00:10	12:01:20	00:01:10	40.	09:48:17	09:50:53	00:02:36
10.	10:51:00	10:52:10	00:01:10	41.	10:00:07	10:02:53	00:02:46
11.	10:00:20	10:01:40	00:01:20	42.	10:08:23	10:10:05	00:01:42
12.	10:10:00	10:12:50	00:02:50	43.	09:52:35	09:55:40	00:03:05
13.	11:20:00	11:22:00	00:02:00	44.	11:00:42	11:05:49	00:05:07
14.	02:30:20	02:33:20	00:03:00	45.	10:50:00	10:52:20	00:02:20
15.	10:02:00	10:03:50	00:01:50	46.	10:52:00	10:55:00	00:03:00
16.	10:25:40	10:27:20	00:01:40	47.	10:52:00	10:56:00	00:04:00
17.	11:30:30	11:32:20	00:01:50	48.	10:41:10	10:42:50	00:01:40
18.	10:53:15	10:54:10	00:00:55	49.	11:26:08	11:27:56	00:01:48
19.	11:38:01	11:38:45	00:00:44	50.	11:36:04	11:37:50	00:01:46
20.	02:40:50	02:41:52	00:01:02	51.	12:58:57	01:00:03	00:01:06
21.	10:00:19	10:02:59	00:02:40	52.	01:59:10	02:00:10	00:01:00
22.	10:03:27	10:05:18	00:01:51	53.	10:08:03	10:09:05	00:01:02
23.	10:23:33	10:26:04	00:02:31	54.	10:09:07	10:10:50	00:01:43
24.	11:00:17	11:05:16	00:04:59	55.	10:24:34	10:25:47	00:01:13
25.	10:53:40	10:54:01	00:00:21	56.	11:00:04	11:02:12	00:02:08
26.	11:13:00	11:15:10	00:02:10	57.	11:15:03	11:17:12	00:02:09
27.	11:53:16	11:54:32	00:01:16	58.	11:16:28	11:18:15	00:01:47
28.	10:10:20	10:20:30	00:10:10	59.	12:25:13	12:27:22	00:02:09
29.	10:30:15	10:32:25	00:02:10	60.	10:10:08	10:12:14	00:02:06
30.	11:00:05	11:03:10	00:03:05	61.	11:01:28	11:02:33	00:01:05
31.	01:27:00	01:30:10	00:03:10				

Mean time spent at OPD registration counter 00:02:08 ±SD 00:01:25.

Table 2: Time spent at the OPD waiting area (n=61).

S. No.	Arrival time in OPD	Entry in OPD room	Time spent in OPD	S. No.	Arrival time in OPD	Entry in OPD room	Time spent in OPD
1.	10:43:10	10:50:55	00:07:45	32.	01:17:00	01:30:30	00:13:30
2.	11:40:00	11:55:30	00:15:30	33.	10:03:17	10:15:38	00:12:21
3.	12:05:20	12:10:45	00:05:25	34.	10:07:29	10:09:28	00:01:59
4.	02:03:15	02:17:00	00:13:45	35.	10:14:08	10:21:11	00:07:03
5.	10:10:25	10:14:20	00:03:55	36.	10:25:17	10:45:28	00:20:11
6.	10:13:20	10:15:00	00:01:40	37.	11:22:43	11:50:21	00:27:38
7.	10:32:00	10:36:00	00:04:00	38.	11:59:28	12:15:17	00:15:49
8.	11:03:00	12:00:00	00:07:00	39.	02:25:05	02:37:15	00:12:10
9.	12:02:00	12:10:00	00:08:00	40.	09:53:35	09:58:58	00:05:23
10.	10:54:56	11:10:44	00:15:48	41.	10:03:44	10:10:39	00:06:55
11.	10:03:00	10:15:00	00:12:00	42.	10:11:22	10:15:34	00:04:12
12.	10:13:10	10:25:20	00:12:10	43.	09:56:44	10:00:13	00:03:29
13.	11:27:00	11:30:40	00:03:40	44.	11:13:41	11:33:00	00:19:19
14.	02:35:00	02:50:00	00:15:00	45.	10:53:40	11:10:00	00:16:20
15.	10:05:30	10:10:30	00:05:00	46.	10:56:50	11:25:00	00:28:10
16.	10:29:30	10:35:45	00:06:15	47.	11:00:55	11:40:00	00:39:05
17.	11:36:40	11:40:20	00:03:40	48.	10:43:25	11:03:30	00:20:05
18.	10:55:18	10:57:57	00:02:39	49.	11:28:17	11:37:47	00:09:30
19.	11:40:19	11:56:32	00:16:13	50.	11:39:09	11:50:02	00:10:53
20.	02:42:53	02:55:39	00:12:46	51.	01:02:17	01:14:39	00:12:22
21.	10:03:26	10:15:26	00:12:00	52.	02:02:47	02:10:40	00:07:53
22.	10:07:34	10:09:16	00:01:42	53.	10:11:56	10:15:33	00:03:37
23.	10:28:53	10:32:28	00:03:35	54.	10:20:28	10:30:07	00:09:39
24.	11:18:18	11:30:58	00:12:40	55.	10:26:17	10:44:47	00:18:30
25.	10:55:03	11:34:28	00:39:25	56.	11:03:51	11:13:19	00:09:28
26.	11:15:23	11:28:52	00:13:29	57.	11:24:38	12:07:15	00:42:37
27.	11:55:26	11:57:22	00:01:56	58.	11:19:48	11:53:24	00:33:36
28.	10:22:30	10:23:20	00:00:50	59.	12:28:17	12:38:35	00:10:18
29.	10:35:20	10:36:30	00:01:10	60.	10:14:57	10:23:39	00:08:42
30.	11:05:20	11:20:20	00:15:00	61.	11:05:01	11:48:01	00:43:00
31.	01:32:20	01:45:20	00:13:00				

Mean time spent at OPD counter 00:12:28 and SD±00:10:14.

Table 3: Time spent at the OPD consultation room (n=61).

S. No.	Entry time in OPD consultation room	Exit time in OPD consultation room	Time spent in OPD consultation room	S. No.	Entry time in OPD consultation room	Exit time in OPD consultation room	Time spent in OPD consultation room
1.	10:50:55	11:02:40	00:11:45	32.	01:30:30	01:40:30	00:10:00
2.	11:55:30	12:02:20	00:06:50	33.	10:15:38	10:28:26	00:12:48
3.	12:10:45	12:20:40	00:09:55	34.	10:09:28	10:24:37	00:15:09
4.	02:17:00	02:27:50	00:10:50	35.	10:21:11	10:25:23	00:04:12
5.	10:14:20	10:17:00	00:02:40	36.	10:45:28	11:00:11	00:14:43
6.	10:15:00	10:30:00	00:15:00	37.	11:50:21	12:01:12	00:10:51
7.	10:40:00	10:50:00	00:10:00	38.	12:15:17	12:30:46	00:15:29
8.	12:00:00	12:10:00	00:10:00	39.	02:37:15	02:45:23	00:08:08
9.	12:12:00	12:30:00	00:18:00	40.	09:58:58	10:05:16	00:06:18
10.	12:10:44	12:14:33	00:03:49	41.	10:10:39	10:20:53	00:10:14
11.	10:15:00	10:25:30	00:10:30	42.	10:15:34	10:25:49	00:10:15
12.	10:25:20	10:40:30	00:15:10	43.	10:00:13	10:03:25	00:03:12
13.	11:30:40	11:50:20	00:19:40	44.	11:33:00	11:40:19	00:07:19
14.	02:50:00	02:59:30	00:09:30	45.	11:10:00	11:24:40	00:14:40

Continued.

S. No.	Entry time in OPD consultation room	Exit time in OPD consultation room	Time spent in OPD consultation room	S. No.	Entry time in OPD consultation room	Exit time in OPD consultation room	Time spent in OPD consultation room
15.	10:10:30	10:20:50	00:10:20	46.	12:15:00	12:25:00	00:10:00
16.	10:35:45	10:55:20	00:19:35	47.	11:40:00	11:50:00	00:10:00
17.	11:40:20	12:05:10	00:24:50	48.	11:03:30	11:14:25	00:10:55
18.	10:57:57	11:05:26	00:07:29	49.	11:37:47	11:42:36	00:04:49
19.	11:56:32	12:01:38	00:05:06	50.	11:50:02	12:00:11	00:10:09
20.	02:55:39	02:58:58	00:03:19	51.	01:14:39	01:30:43	00:16:04
21.	10:15:26	10:25:47	00:10:21	52.	02:10:40	02:13:52	00:03:12
22.	10:09:16	10:17:11	00:07:55	53.	10:15:33	10:19:20	00:03:47
23.	10:32:28	10:34:18	00:01:50	54.	10:30:07	11:04:18	00:34:11
24.	11:30:58	11:37:31	00:06:33	55.	10:44:47	10:59:16	00:14:29
25.	11:34:28	11:38:23	00:03:55	56.	11:13:19	11:19:49	00:06:30
26.	11:28:52	11:31:58	00:03:06	57.	12:07:15	12:14:10	00:06:55
27.	11:57:22	12:18:05	00:20:43	58.	11:53:24	11:57:15	00:03:51
28.	11:23:20	11:24:10	00:00:50	59.	12:38:35	12:48:21	00:09:46
29.	10:36:30	10:48:30	00:12:00	60.	10:23:39	10:36:08	00:12:29
30.	11:20:20	11:30:30	00:10:10	61.	11:48:01	11:51:48	00:03:47
31.	01:45:20	01:55:45	00:10:25				

Mean time spent at OPD consultation 00:10:06 and SD±00:05:59.

Table 4: Time spent at the pharmacy counters (n=61).

S. No.	Arrival time at pharmacy	Exit time at pharmacy	Time spent at pharmacy	S. No.	Arrival time at pharmacy	Exit time at pharmacy	Time spent at pharmacy
1.	11:05:35	11:20:20	00:14:45	32.	01:45:00	02:00:30	00:15:30
2.	12:03:30	12:20:35	00:17:05	33.	10:30:17	10:32:26	00:02:09
3.	12:21:25	12:30:35	00:09:10	34.	10:35:49	10:40:21	00:04:32
4.	02:28:20	02:50:00	00:21:40	35.	10:29:13	10:45:18	00:16:05
5.	10:18:00	10:30:00	00:12:00	36.	11:03:13	11:10:28	00:07:15
6.	10:50:00	10:55:00	00:05:00	37.	12:28:26	12:33:28	00:05:02
7.	11:00:00	11:30:00	00:30:00	38.	12:32:39	12:41:57	00:09:18
8.	12:12:00	12:20:20	00:08:20	39.	03:02:24	03:07:18	00:04:54
9.	12:32:00	12:40:00	00:08:00	40.	10:06:38	10:10:15	00:03:37
10.	00:00:00	00:00:00	00:00:00	41.	10:22:14	10:28:06	00:05:52
11.	10:40:00	10:55:00	00:15:00	42.	10:30:16	10:35:28	00:05:12
12.	10:42:00	11:05:00	00:23:00	43.	00:00:00	00:00:00	00:00:00
13.	12:01:20	12:30:30	00:29:10	44.	00:00:00	00:00:00	00:00:00
14.	10:30:20	10:40:20	00:10:00	45.	11:25:30	11:32:20	00:06:50
15.	10:23:50	10:50:30	00:26:40	46.	12:25:30	01:04:20	00:38:50
16.	11:00:20	11:10:20	00:10:00	47.	11:35:00	12:09:00	00:34:00
17.	12:10:10	12:25:30	00:15:20	48.	11:46:17	11:52:47	00:06:30
18.	11:05:51	11:26:58	00:21:07	49.	11:46:17	11:49:15	00:02:58
19.	00:00:00	00:00:00	00:00:00	50.	12:03:24	12:05:12	00:01:48
20.	00:00:00	00:00:00	00:00:00	51.	01:32:51	01:40:21	00:07:30
21.	10:30:16	10:38:31	00:08:15	52.	02:56:21	03:00:22	00:04:01
22.	10:20:08	10:31:12	00:11:04	53.	01:33:11	01:38:27	00:05:16
23.	10:39:22	10:43:34	00:04:12	54.	11:45:59	11:53:31	00:07:32
24.	11:50:16	11:55:19	00:05:03	55.	11:02:01	11:07:38	00:05:37
25.	11:42:33	12:05:40	00:23:07	56.	11:21:53	11:25:13	00:03:20
26.	11:34:28	11:38:23	00:03:55	57.	12:40:23	12:45:18	00:04:55
27.	12:20:10	12:35:20	00:15:10	58.	12:00:17	12:05:52	00:05:35
28.	00:00:00	00:00:00	00:00:00	59.	12:50:18	01:03:17	00:12:59
29.	10:50:20	10:57:30	00:07:10	60.	10:57:47	10:58:40	00:00:53
30.	11:41:50	11:45:40	00:03:50	61.	00:00:00	00:00:00	00:00:00
31.	02:00:15	02:15:45	00:15:30				

Mean time spent at pharmacy 00:09:52 and SD±00:08:58

Table 5: Time spent at the investigation counters lab/x-ray/ECG/bloods (n=61).

S. No.	Arrival at investigation counters lab/ECG/x-ray/bloods	Call for sampling/ testing	Time spent at investigation counter	S. No.	Arrival at investigation counters lab/ECG/ x-ray/bloods	Call for sampling/ testing	Time spent at investigation counter
1.	00:00:00	00:00:00	00:00:00	32.	00:00:00	00:00:00	00:00:00
2.	00:00:00	00:00:00	00:00:00	33.	00:00:00	00:00:00	00:00:00
3.	00:00:00	00:00:00	00:00:00	34.	00:00:00	00:00:00	00:00:00
4.	00:00:00	00:00:00	00:00:00	35.	00:00:00	00:00:00	00:00:00
5.	00:00:00	00:00:00	00:00:00	36.	00:00:00	00:00:00	00:00:00
6.	00:00:00	00:00:00	00:00:00	37.	12:04:16	12:25:45	00:21:29
7.	11:32:00	11:35:00	00:03:00	38.	02:47:18	02:59:11	00:11:53
8.	00:00:00	00:00:00	00:00:00	39.	00:00:00	00:00:00	00:00:00
9.	00:00:00	00:00:00	00:00:00	40.	00:00:00	00:00:00	00:00:00
10.	12:20:45	12:45:48	00:25:03	41.	00:00:00	00:00:00	00:00:00
11.	00:00:00	00:00:00	00:00:00	42.	00:00:00	00:00:00	00:00:00
12.	00:00:00	00:00:00	00:00:00	43.	10:06:03	10:23:19	00:17:16
13.	00:00:00	00:00:00	00:00:00	44.	11:44:10	11:48:12	00:04:02
14.	00:00:00	00:00:00	00:00:00	45.	11:32:00	12:00:20	00:28:20
15.	00:00:00	00:00:00	00:00:00	46.	00:00:00	00:00:00	00:00:00
16.	00:00:00	00:00:00	00:00:00	47.	00:00:00	00:00:00	00:00:00
17.	00:00:00	00:00:00	00:00:00	48.	00:00:00	00:00:00	00:00:00
18.	00:00:00	00:00:00	00:00:00	49.	00:00:00	00:00:00	00:00:00
19.	00:00:00	00:00:00	00:00:00	50.	00:00:00	00:00:00	00:00:00
20.	00:00:00	00:00:00	00:00:00	51.	00:00:00	00:00:00	00:00:00
21.	00:00:00	00:00:00	00:00:00	52.	02:34:48	02:50:50	00:16:02
22.	00:00:00	00:00:00	00:00:00	53.	10:22:19	10:43:12	00:20:53
23.	00:00:00	00:00:00	00:00:00	54.	11:09:37	11:40:30	00:30:53
24.	11:40:18	11:44:59	00:04:41	55.	00:00:00	00:00:00	00:00:00
25.	00:00:00	00:00:00	00:00:00	56.	00:00:00	00:00:00	00:00:00
26.	00:00:00	00:00:00	00:00:00	57.	12:16:39	12:25:47	00:09:08
27.	00:00:00	00:00:00	00:00:00	58.	00:00:00	00:00:00	00:00:00
28.	00:00:00	00:00:00	00:00:00	59.	00:00:00	00:00:00	00:00:00
29.	00:00:00	00:00:00	00:00:00	60.	11:00:05	11:17:21	00:17:16
30.	11:33:20	11:40:00	00:06:40	61.	11:55:06	12:06:33	00:11:27
31.	00:00:00	00:00:00	00:00:00				

Mean time spent at investigation counter 00:15:12 and SD±00:08:56

OPD waiting area

The average waiting time in the OPD area was found to be 00:12:28 ±SD of 00:10:14. In the present study the time taken for waiting in the OPD was normal in 37 (60.6%) of the individuals (Table 2).

OPD consultation room

The average time spent in the OPD consultation room was about 00:10:06±00:05:59. The turn of the OPD consultation was also found to be normal in 34 (55.7%) of the individuals. The time spent during the consultation in the OPD consultation process was found to be normal in 22 (36%), sufficient in 17 (27.9%) and more than sufficient in 16 (26.2%) of the individuals (Table 3).

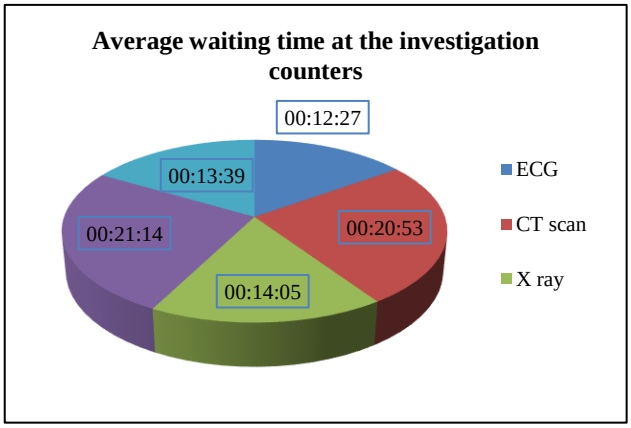

Figure 1: Average waiting time spent at the various investigation counters (n=61).

Table 6: Time spent at the investigation counters (n=61).

Time taken for various investigations	Arrival	Call for testing	Waiting time
ECG	11:44:10	11:48:12	00:04:02
ECG	11:32:00	12:00:20	00:28:20
ECG	11:40:18	11:44:59	00:04:41
ECG	02:34:48	02:50:50	00:16:02
ECG	12:16:39	12:25:47	00:09:08
CT scan	10:06:03	10:26:56	00:20:53
X-ray	11:33:20	11:40:00	00:06:40
X-ray	12:04:16	12:25:45	00:21:29
USG	02:47:18	02:59:11	00:11:53
USG	11:09:37	11:40:12	00:30:35
Blood tests	11:00:05	11:17:21	00:17:16
Blood tests	11:55:06	12:06:33	00:11:27
Blood tests	11:32:00	11:35:00	00:03:00
Blood tests	12:20:45	12:45:48	00:25:03
Blood tests	11:55:06	12:06:33	00:11:27

Pharmacy area

The average time spent at the pharmacy counter was found to be 00:09:52±00:08:58.

The time spent at the pharmacy counter was normal in 40 (65.5%) of the individuals and sufficient in 14 (22.9%) of the study participants (Table 4).

Table 7: Time spent at the investigation counters: mean waiting time±standard deviation (n=61).

Time taken for various investigations	Average waiting time (mean waiting time)	Standard deviation
ECG	00:12:27	00:10:05
CT scan	00:20:53	00:20:53
X-ray	00:14:05	00:10:29
USG	00:21:14	00:13:13
Blood tests	00:13:39	00:08:09

Investigations (lab, ECG, x-ray, USG, CT scan and blood tests) area

The average time spent at the investigation area was 00:15:12 ±SD of 00:08:56. The average time spent during the ECG was 00:12:27 ±SD of 00:10:05, CT scan was 00:20:53, x-ray was 00:14:05±00:10:29, ultrasound investigation was 00:21:14±00:10:29 and the blood tests was 00:13:39±00:08:09 (Figure 1). The opinion regarding the waiting time for the lab investigations were normal in 46 (75.4%) and much time spent in 8 (13.1%) of the individuals (Table 8).

Various counters

The total average time spent in the hospital work up in the OPD was 00:32:25±SD of 00:18:17. The overall satisfaction in terms of waiting time was found to be good in 38 (62.3%) and was excellent in 10 (16.4%) of the individuals (Table 8).

Table 8: Patient satisfaction questionnaire PSQ-10 responses from the study participants (n=61).

Patient satisfaction questionnaire PSQ-10					
Q1. What was your experience in queue at Registration counter"?	Very poor- 0 (0)	Poor- 1 (1.6%)	Satisfactory- 40 (65.6%)	Good- 10 (16.4%)	Very good- 10 (16.4%)
Q2. According to you pace of registration queue was?	Fast- 22 (36%)	Normal- 37 (60.6%)	Slow- 1 (1.6)	Very slow- 1 (1.6%)	Unbearable- 0
Q3. Time taken in registration counter according to you was?	Very quick- 17 (27.8%)	Normal- 42 (68.8%)	Slow- 1 (1.6%)	Very slow- 1 (1.6%)	Unbearable- 0
Q4. What was your opinion regarding time taken during waiting in OPD?	Quick- 12 (19.7%)	Normal- 37 (60.6%)	Slow- 11 (18%)	Very slow- 1 (1.6%)	Unbearable- 0
Q5. How was the turn of OPD consultation according to you?	Quick- 23 (37.7%)	Normal- 34 (55.7%)	Slow- 3 (4.9%)	Very slow- 1 (1.6%)	Unbearable- 0
Q6. According to you, how much time for consultation has been provided to you by the doctor?	Very less- 2 (3.2%)	Less- 4 (6.5%)	Normal- 22 (36%)	Sufficient- 17 (27.9%)	More than sufficient- 16 (26.2%)
Q7. Time spent at pharmacy counter was?	Very less- 2 (3.3%)	Less- 3 (4.9%)	Normal- 40 (65.6%)	Sufficient- 14 (22.9%)	Very much- 2 (3.2%)
Q8. How much time was given by pharmacist to explain dose and method of drug intake?	Very less- 4 (6.55%)	Less- 10 (16.4%)	Normal- 36 (59%)	Sufficient- 9 (14.7%)	More than sufficient- 2 (3.3%)
Q9. if any pathological investigation was advised to you by consulting doctor, what was your opinion regarding waiting time in lab?	Very less- 1 (1.6%)	Less- 5 (8.2%)	Normal- 46 (75.4%)	Much- 8 (13.1%)	Very much- 1 (1.6%)
Q10. What was your overall experience in hospital in terms of waiting time at various counters since your arrival?	Very poor- 0 (0)	Poor- 2 (3.3%)	Good- 38 (62.3%)	Very good- 11 (18%)	Excellent- 10 (16.4%)

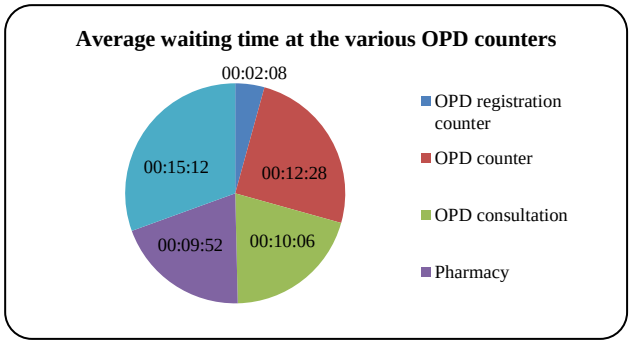

Figure 2: Average waiting time spent at the various out-patient department counters (n=61).

DISCUSSION

In a study done by Sengupta et al, the maximum time spent was in the outside of OPD area and was nearly 01:15:15±SD 00:13:49, which is significantly high when compared to our study.[1] In the present study the maximum time spent was in the investigation counter with a mean average time around 00:15:12±SD of 00:08:56. The second most time spent area was the OPD counter with mean average time of 00:12:28±SD of 00:10:141 quite high compared to our study.

As per the study done by Sengupta et al the overall patient satisfaction was seen in 18 (45%) and found to be excellent in 2 (5%) of the individuals only.[1]

In the study done by Chopade et al, 2019 the patient satisfaction was found to be good in 50.34% of the individuals.[2] In the present study the OPD consultation was satisfied and normal in nearly 22 (36%) of the individuals with 16 (26%) spent more than sufficient time in the OPD consultation.

The study by Anand et al, found that maximum time was spent outside OPD room with a busy outlook.[9] The study by Ravichandran et al, found that maximum time was spent in patient examination and consultation, but not the maximum average time in the present study was at the investigation counters.[10] In a study by Manna et al, mean time was maximum at the OPD registration counter.[11]

In the PSQ-10 questionnaire, the present study revealed that the patient's overall experience was good in 38 (62.3%) and excellent in 10 (16.4%). In a study done by Kumari et al, in their study total satisfaction were 73%, which in comparison is similar to the present study.[12]

CONCLUSION

In the present study the time spent in the investigation counter (00:15:12±00:08:56) was the highest, followed by the OPD counters (00:12:28±00:10:14), the meantime spent at the OPD consultation and pharmacy was 00:10:06±00:05:59 and 00:09:52±00:08:58 respectively. The total average waiting time spent during the hospital visits was 00:32:25±00:18:17. The overall patient satisfaction using the PSQ-10 questionnaire was good in 38(62.3%) and in about 10 (16.4%) of the individuals felt that the hospital services were excellent. There were definitely lesser pitfalls that became apparent during this study. The shortcomings appeared to be minimal, due to the location of OPD investigation counters at various places especially in a busy hospital area. The staffing pattern was adequate except on government holidays, there were no particular delay in the OPD care setting. The doctors, nurses and pharmacists were adequate. The most of the study participants felt that the OPD registration queue was normal. However, the time spent at the investigation counters which is at the peak can be reduced by prioritization and faster case work-up. The time spent at the rest of the OPD counters were reasonable including the OPD consultation, that was satisfactory and elaborate in the majority of the study participants.

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