PATIENT WAITING TIME AND PATIENT SATISFACTION IN OUTPATIENT DEPARTMENT OF KAYACHIKITSA, VAIDYARATNAM AYURVEDA COLLEGE HOSPITAL, OLLUR, THRISSUR, KERALA

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ABSTRACT

Background & Objective: Patient waiting time is an important indicator in the assessment of healthcare quality offered by hospitals. Patient satisfaction with waiting time plays a crucial role in quality assurance. The present study was aimed to assess the mean patient waiting time and satisfaction in Kayachikitsa OPD, Vaidyaratnam Ayurveda College, Ollur, Kerala. **Methodology:** A Descriptive Cross-sectional study was conducted taking 100 new patients visiting the Kayachikitsa OPD, VACH for one month. The data obtained from OPD computer records and structured questionnaire were analysed using appropriate statistical tests. **Results:** Female preponderance (72%) was seen in study. Of all patients, 16% were illiterate & 43% had primary education which showed significant impact on waiting time and patient satisfaction. The mean waiting time was found as 18.150 (S.D 15.33) minutes and 79% patients waited for less than 30 minutes. Patients who registered from 8-9 am showed highest mean waiting time of 32.31 minutes. 66% patients were fully satisfied with hospital OPD services, good response by 24% and average by 9%. Patient satisfaction between waiting time groups showed highly significant difference ($\chi^2(5) = 33.783$, $p < 0.005$) and an inverse relation with waiting time. **Conclusion:** The mean outpatient waiting time obtained as 18.150 minutes was low in comparison to other studies. Majority patients were satisfied with our hospital health services.

Keywords: *Waiting time, Patient satisfaction, quality, OPD*

INTRODUCTION

Patient waiting time is one of the important factors which affect utilization of healthcare services. Waiting time refers to the time a patient waits in the clinic before being seen by a doctor[1]. Patients spend substantial amount of time in the clinics waiting for services to be delivered by physicians and other al-lied health professionals. Patients perceive long waiting times as a barrier to actually obtaining services. Keeping patients waiting unnecessarily can cause stress to both patient and doctor. The degree to which health consumers are satisfied with the care

received is strongly related to the quality of the waiting experience[2].

The Institute of Medicine (IOM) recommends that, at least 90% of patients should be seen within 30 min of their scheduled appointment time[3]. A source of dissatisfaction with health care reported by patients is a long waiting time in the clinic, and several studies have documented the negative association between increased waiting time and patient satisfaction with primary care[4]. Waiting time is a commonly cited factor affecting patient satisfaction in the outpatient setting. Registration time, payment process, recording of data, few human resources and work process are the determinants of patient waiting time in the general outpatient departments. One of the most important indexes of the health care quality is patient's satisfaction and it takes place only when there is a process based on management. One of the processes in the health care organizations is the process of the appropriate management of waiting time[5].

Large number of patients visits the Kayachikitsa OPD of our hospital with an average of 60 - 70 patients per day and they often complain of spending hours waiting to be seen by the doctor. Patients waiting time is not only a factor that affects patient satisfaction but it is also one of the indexes to evaluate the quality of outpatient services. So there is a need to develop a better management process to ensure good quality healthcare to the patients. Based on these factors, this study was conducted to find out the average outpatient waiting time in Vaidyaratnam Ayurveda College Hospital so that new management techniques helpful in reducing the waiting time of patients can be implemented, thus improving the quality of services to patients. This study also helped in understanding the perception of patients on waiting time and whether the health services delivered by our hospital meet their expectations.

Objectives of the study
1. The mean waiting time of patients visiting the outpatient department of Kayachikitsa, Vaid-

yaratnam Ayurveda College Hospital during the period 01/01/18 – 31/01/18
2. The outcome of patient satisfaction on waiting time and significant association between waiting time and patient satisfaction.

Methodology
Study design
Descriptive cross sectional study.
Study setting
The outpatient department of Kayachikitsa, Vaidyaratnam Ayurveda College Hospital, Thaikattussery, Ollur, Thrissur.
Study population
The patients who visited the outpatient department of Kayachikitsa, Vaidyaratnam Ayurveda College Hospital, Thaikattussery, Ollur, Thrissur during the period 01/01/18 – 31/01/18.
Inclusion criteria
In the present study, only new patients who visited the outpatient department of Vaidyaratnam Ayurveda College Hospital, Thaikattussery, Ollur, Thrissur during the period 01/01/18 – 31/01/18 were taken for the study.
Exclusion criteria
Patients with old registration and critically ill patients who visited the hospital OPD during the period 01/01/18 – 31/01/18 were excluded from the study.
Sample size
Sample size estimation
The minimum sample size was determined using the formula for estimating required sample size in a population less than 10,000.
$N_f = n/1 + (n/N)$
Value of n was calculated using the formula $n = Z^2 pq/d^2$
where n = sample size, Z = standard normal deviate at 95% confidence level = 1.96, P = prevalence of the factor under study, 84% (0.84) from a previous study [6], q = complementary factor for $q = 1 - p$, N = average number of targeted population (i.e., average number of patients attending OPD daily) = 70, n_f =

minimum required sample size (for population less than 10,000), d = precision/tolerable margin of error = 5% (0.05).

Using the above sample size calculation method, the sample size was fixed as 100 for the study.

Sampling technique

Each patient was randomly selected with inclusion and exclusion criteria.

Study tools and data collection

1. OPD Computer records of patient waiting time
2. Structured questionnaire including patient satisfaction scores (0-3)

Procedure

Only new patients visiting the outpatient department of Kayachikitsa, Vaidyaratnam Ayurveda College Hospital, Thaikattussery, Ollur, Thrissur for the first time during the period 01/01/18 – 31/01/18 were taken for the study. Patients who visited Kayachikitsa OPD on the same day of a week seen by the same doctor during 1 month were taken for the study. Data regarding waiting time of patients was collected from OPD computer records. A structured questionnaire was prepared and filled by all patients noting the registration time and the time patient was seen by the doctor. Based on the data collected, average waiting time was calculated. Patient satisfaction and their perception on waiting time were assessed using a scoring system in the questionnaire. The purpose of the study was explained to each participant before interviewing. Trained health personnel assisted patients who could not read or write in completing the questionnaire.

Data collection

The following data were collected from the questionnaire and OPD computer records:

1. Socio demographic characteristics of the patients including patient's age, gender, domicile and level of education.
2. Registration and consultation time.
3. Average Outpatient waiting time.
4. Outcome of patient satisfaction.

The data generated were entered and analysed using appropriate statistical tests.

Statistical analysis of collected data

The collected data were recorded and analysed under the following headings.

1. Socio demographic data
2. Average Outpatient waiting time
3. Patient satisfaction score

In the present study, socio demographic data of age, gender, domicile and education level of patients were recorded. The data was grouped and entered in a master excel sheet. Frequency distribution of the different variables was statistically analysed.

The data regarding time of registration by the patients and the time of consultation by the doctor was collected from OPD computer records. Average waiting time was then calculated using statistical methods. All the patients taken in the present study were categorised into groups on the basis of age, education level, registration time and waiting time. The difference in mean waiting time between groups was assessed using One-way anova test. The outcome of patient satisfaction was assessed using Kruskar - Wallis test to determine difference in patient satisfaction score according to waiting time.

Ethical consideration

An informed consent was obtained from each patient before the study.

RESULTS

The total number of patients in this study distributed between the age of 20 years and 83 years with mean of 54.50, median 58.00, mode 60.0 and standard deviation of 13.91.

Female preponderance (72%) was seen in the study and 78% of patients in the study hailed from rural area.
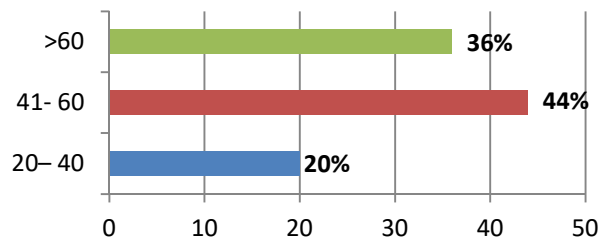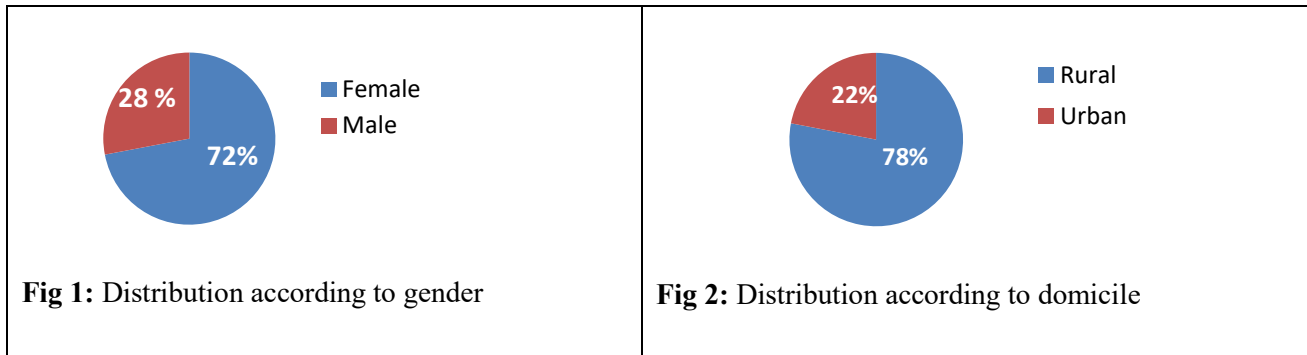
Fig 1: Distribution according to gender

Fig 2: Distribution according to domicile

Fig 3: Distribution according to age group

Table 1: Distribution according to level of education

Education level	Frequency	Percent
Illiterate	16	16.0
Primary	43	43.0
Higher Secondary	32	32.0
Graduate or above	9	9.0
Total	100	100.0

Average Outpatient waiting time

Table 2: Descriptive of average waiting time of patients

Mean		18.150
Std. Error of Mean		1.5333
Median		15.000
Mode		2.0
Std. Deviation		15.3329
Minimum		1.0
Maximum		58.0
Percentiles	25	4.000
	50	15.000
	75	29.000

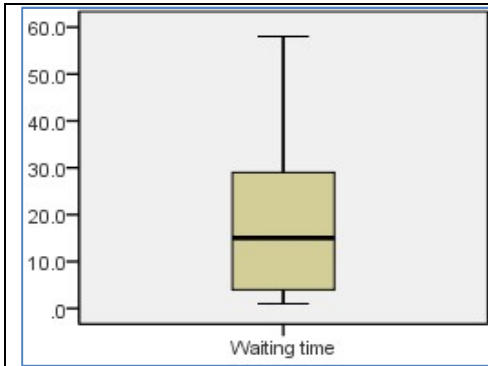The mean waiting time (in min) of patients who visited the outpatient department was found to be 18.150 (S.D 15.33).

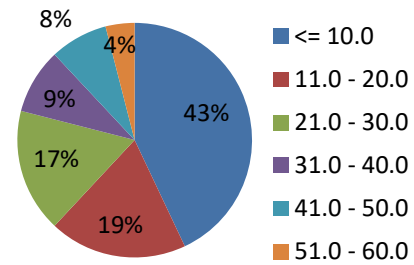**Fig 4:** Average waiting time - Box and whiskers plot

Fig 5: Distribution according to waiting time

This shows that 79% patients waited for less than 30 minutes while 21% had a waiting time of more than 30 minutes.

Table 3: Waiting time on basis of age wise distribution

Age	Mean	N	Std. Deviation
20-40	17.400	20	12.4959
41- 60	20.545	44	15.5361
>60	15.639	36	16.4215
Total	18.150	100	15.3329

Table 4: Waiting time - distribution on basis of education

Education	Frequency						Total
	<= 10	11- 20	21 - 30	31 - 40	41 - 50	51 - 60	
Illiterate	5	6	2	3	0	0	16
Primary	7	6	11	9	6	4	43
Secondary	22	7	3	0	0	0	32
Graduate	9	0	0	0	0	0	9

The mean waiting time of patients was assessed by level of education and it was found that of 21% who had a waiting time of more than 30 minutes, 18% were having only primary education and rest 3 % were illiterate. This implies that the education status of a patient has a significant impact on outpatient waiting time.

Table 5: Waiting time – Distribution on basis of OPD Registration time

Registration time	Mean	N	Std. Deviation
8:00- 9:00	32.316	19	16.4892
9:00- 10:00	13.789	19	14.7820
10:00- 11:00	14.818	22	11.4669
11:00- 12:00	18.346	26	14.1646
12:00- 13:00	9.714	14	9.8248
Total	18.150	100	15.3329

Waiting time was assessed by distributing patients into 5 groups on the basis of registration time. It was found that the patients who registered at OPD from 8:00 am - 9:00 am showed the highest mean score of waiting time (in min) of 32.31 (S.D 16.48). This implies that patients registering at OPD in the 1st hour 8:00 – 9:00 am had to wait for the longest period when compared to other hours of the OPD time.

Table 6: Difference in waiting time between groups on basis of OPD registration time - One way anova test

OPD registration time	N	Mean	Std. Deviation	Std. Error	95% C.I. for Mean		Min.	Max.
					Lower	Upper		
8:00- 9:00	19	32.316	16.4892	3.7829	24.368	40.263	3.0	58.0
9:00- 10:00	19	13.789	14.7820	3.3912	6.665	20.914	2.0	45.0
10:00- 11:00	22	14.818	11.4669	2.4447	9.734	19.902	2.0	50.0
11:00- 12:00	26	18.346	14.1646	2.7779	12.625	24.067	1.0	45.0
12:00- 13:00	14	9.714	9.8248	2.6258	4.042	15.387	1.0	35.0
Total	100	18.150	15.3329	1.5333	15.108	21.192	1.0	58.0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5415.472	4	1353.868	7.202	.000
Within Groups	17859.278	95	187.992		
Total	23274.750	99			

One way anova test was done to compare the mean waiting time between groups on basis of OPD registration time and the test was found to be statistically highly significant (F (4,95) = 7.202, p < 0.005). This shows that there were statistically significant differences in waiting time between groups distributed on the basis of OPD registration time.
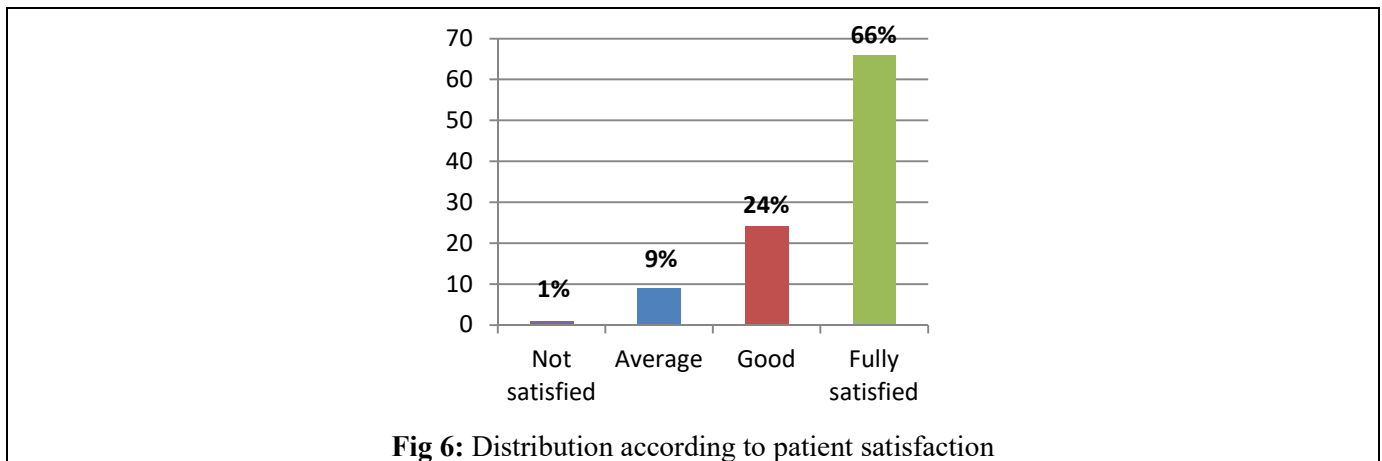

Fig 6: Distribution according to patient satisfaction

Post HOC comparison using Tukey HSD test

Table7: Post hoc comparison to determine the specific groups that differed in mean waiting time

Registration Time (I)	Registration Time (J)	Mean Difference (I-J)	Std. Error	Sig.	95% C.I Lower	Upper
8:00- 9:00	9:00 - 10:00	18.5263*	4.4484	.001	6.156	30.897
	10:00 - 11:00	17.4976*	4.2941	.001	5.556	29.439
	11:00 - 12:00	13.9696*	4.1382	.009	2.462	25.477
	12:00 - 13:00	22.6015*	4.8293	.000	9.172	36.031
9:00 – 10:00	10:00 - 11:00	-1.0287	4.2941	.999	-12.970	10.913
	11:00 - 12:00	-4.5567	4.1382	.806	-16.064	6.951
	12:00 - 13:00	4.0752	4.8293	.916	-9.355	17.505
10:00 – 11:00	9:00 - 10:00	1.0287	4.2941	.999	-10.913	12.970
	11:00 - 12:00	-3.5280	3.9718	.901	-14.573	7.517
	12:00 - 13:00	5.1039	4.6876	.812	-7.932	18.139
11:00 – 12:00	9:00 - 10:00	4.5567	4.1382	.806	-6.951	16.064
	10:00 - 11:00	3.5280	3.9718	.901	-7.517	14.573
	12:00 - 13:00	8.6319	4.5452	.325	-4.008	21.271
12:00 – 13:00	9:00 - 10:00	-4.0752	4.8293	.916	-17.505	9.355
	10:00 - 11:00	-5.1039	4.6876	.812	-18.139	7.932
	11:00 - 12:00	-8.6319	4.5452	.325	-21.271	4.008

Post hoc comparison done using Tukey HSD test indicated that the group of patients who registered between 8:00 – 9:00 am was significantly different from all other four groups.

Patient satisfaction score

The median score of patient satisfaction was obtained as 3.000. The minimum score was 0 whereas the maximum score was 3.
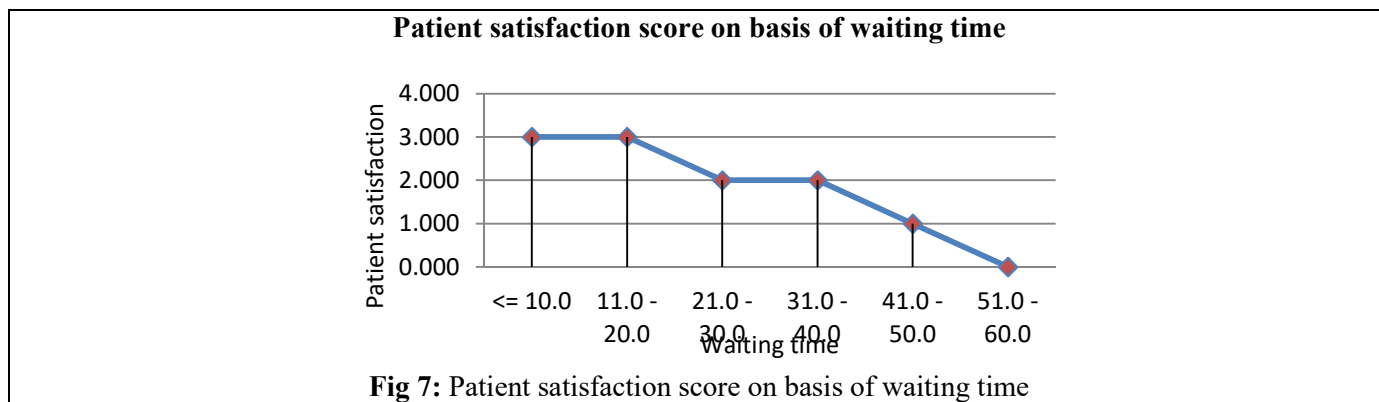

Fig 7: Patient satisfaction score on basis of waiting time

Table 8: Patient satisfaction on basis of education level

Education level	Mean	N	Std. Deviation
Illiterate	1.814	16	.9065
Primary	2.813	43	.4031
Higher secondary	2.844	32	.3689
Graduate	3.000	9	.0000
Total	2.410	100	.8299

From this, it is evident that the patient satisfaction and their perception of health services depend upon their level of education.

The median value of patient satisfaction score of each group was obtained and it was found that pa-

tient satisfaction depends on the patient waiting time. The above data shows marked reduction in patient satisfaction score with increasing waiting time.

Table 9: Kruskal Wallis test to determine difference in patient satisfaction score according to waiting time

Ranks			
	Waiting time	N	Mean Rank
Patient satisfaction	<= 10.0	43	63.48
	11.0 - 20.0	19	50.66
	21.0 - 30.0	17	45.62
	31.0 - 40.0	9	40.11
	41.0 - 50.0	8	25.44
	51.0 - 60.0	4	4.50
	Total	100	

	Patient satisfaction
Chi-Square	33.783
df	5
Asymp. Sig.	.000

Kruskal Wallis test showed that there was a statistically highly significant difference in patient satisfaction score between the different waiting time groups, $(\chi^2(5) = 33.783, p < 0.005)$.

DISCUSSION

The study was undertaken to assess the mean patient waiting time in the Outpatient department of Kayachikitsa, Vaidyaratnam Ayurveda College Hospital, Ollur, Thrissur, Kerala. This study also aimed at finding any significant association between the outpatient waiting time and patient satisfaction with the delivery of health services in the hospital. The study revealed that the mean waiting time of patients who visited the outpatient department was found to be 18.150 (S.D 15.33) minutes, with maximum waiting time of 58 minutes and minimum of one minute. This finding is however at variance with the waiting time seen in some of the similar studies done earlier.

A recent study conducted at education research society hospital at Gujarat[7] showed mean waiting time of 12.16 minutes. In another study conducted at surgical hospital of Vietnam[8] in 2014 showed an average waiting time of 50.41 minutes whereas in Ibadan, Nigeria[9], the average waiting time was found to be 74 minutes. So, it is evident that the mean patient waiting time of 18.150 (S.D 15.33) minutes obtained in the present study is low when compared with other studies. However, it was found that 79% patients waited for less than 30 minutes whereas 21% had a waiting time of more than 30 minutes. This finding revealed that our hospital is unable to meet the recommendations of IOM, that, at least 90% of patients should be seen within 30 min of their scheduled appointment time[3]. Of 21% of patients who had a waiting time of more than 30 minutes, 18% were having only primary education and rest 3 % were illiterate. This implies that the education status of a patient has a significant impact on outpa-

tient waiting time. The level of education of a patient may affect the searching time taken by the patient to find suitable OPD and doctor. It was found that the patients who registered at OPD from 8:00 am - 9:00 am showed the highest mean score of waiting time of 32.31 (S.D 16.48) minutes when compared with other hours of the day. This may be because chronic cases mostly report in the early hours of OPD and it takes longer time for the doctor to examine them. Another reason may be that working people prefer visiting the doctor in the early hour of OPD before leaving for work. Waiting time may also be affected by factors such as long queues at registration counter, lack of paramedical staff, day of visit, time of visit and operational insufficiency. Increased waiting time in OPD causes a negative impact on patient's satisfaction and health care quality can be best assessed by measuring the level of patient satisfaction. Majority **(**66%) were fully satisfied with the services delivered in the hospital OPD. The study also showed that the mean satisfaction score of illiterate patients and those with primary level education was less than that of higher educated groups. Education increases patient satisfaction and results in improved quality of health services and better outcome. Patients with less waiting time period showed higher satisfaction score than those who waited for longer periods indicating a significant association with each other.

CONCLUSION

The present study was aimed at assessing the mean patient waiting time and patient satisfaction at Outpatient Department of Kayachikitsa, Vaidyaratnam Ayurveda College Hospital, Ollur, Thrissur. The mean patient waiting time was found as 18.150 (S.D 15.33) minutes which is low in comparison to other studies. The study revealed that 79% patients waited for less than 30 minutes whereas 21% had a waiting time of more than 30 minutes. Most delay can be attributed to the long queues at registration counter between 8am and 9am and shortage of paramedical

staff. Majority of the patients were satisfied with our hospital services. Patient satisfaction between waiting time groups showed highly significant difference ($\chi^2(5) = 33.783$, p < 0.005) and an inverse relation with waiting time. Level of education also showed impact on patient waiting time and patient satisfaction. Improvement in existing system of health care in our hospital is necessary to ensure good quality health services.

Limitations
- Limited time for a comprehensive interview with the patient.
- The study was conducted by taking patients who visited the Kayachikitsa OPD only.
- Study duration was only 1 month.

Recommendations
- Increase the number of health workers in the hospital OPD.
- Allotting appointment time to patients and make early bookings.
- Triage system should be adopted to sort out patients with urgent need of attention.
- Provide timely training to health care providers regarding implementation of new management tools and techniques.

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