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PDCA Analysis Of Panchkarma At Ayurvedic Hospital In Up, India

Article History:

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Abstracts: Time management is a crucial activity assist in improvement. This is followed in health care. The PDCA cycle is a tool used to access an activity The ayurvedic procedures can also be benefited by application of PDCA techniques. This study involves the use of PDCA cycle in analyzing the of Panchkarma at Ayurvedic hospital in UP. The results showed that application of PDCA showed improvements in areas like procedure management waiting times and patient satisfaction.

Keywords: Panchakarma, PDCA, Ayurveda

INTRODUCTION

Management of time is crucial for delivery of quality health service irrespective of origin to patient. This on time service delivery has positive impacts on parameters like patient satisfaction staff productivity and stress management which overall helps to promote a good work life balance. This is true for all health streams like AYUSH and modern medicine. In modern times panchakarma procedures are the integral part of ayurvedic treatment. that compromises a series of specialized treatment aimed at rejuvenating and detoxifying the body as well as curing the body ailment. The need for standardization for consistency emphasizes the importance of establishing consistent protocols and guidelines in panchakarma practices to ensure steady treatment outcomes, evidence-based affirmation and patient safety. Standardization in panchakarma is also significant for stable research and knowledge-sharing, enabling effective amalgamation of this ancient healing system into modern healthcare practices. The standardization could be achieved by improving management in the panchakarma practice which can be improved by applying basic management tool. At present the PDCA approach plan do check act is a popular approach employed in hospitals to improve the activities. This PDCA

could also be applied for panchakarma process management. By promoting such standardization procedure consultant can enhance the authenticity and acceptance of panchakarma as a valuable therapeutic modality, ensuring its sustainable growth, and recognition in the global healthcare landscape. This study outlines the importance of implementing time management measures using PDCA technique to ensure enhanced time management in Ayurveda panchakrma therapies, reduces waiting time and making the process smoother and more satisfactory for patients. To attract more patients to opt for ayurvedic treatment. (Pal.,etal 2025, Yadav, etal.,2017)

MATERIALS AND METHODS

The study was conducted in panchkarma department of Bharat Ayurved medical college hospital & research centre, Muzaffarnagar, UP. The study was conducted in two phases.

Inclusion criteria

Exclusion criteria

Phase 1 – This consisted of analysis of current practice in which employees of panchkarma department as well as patients were observed for a period of one month from 1st-31st august 2024 for their routine activity.

Phase 2- This included the implementation of PDCA and measuring the post impacts of PDCA in which the PDCA application protocol was planned. The protocol was submitted for approval and after seeking approval the awareness for PDCA implementation was conducted as per clinical guideline and SOP for the panchkarma department staff.

RESULTS

A total of 917 procedures were enrolled and analyzed on the based on the inclusion exclusion criteria in the study. The procedures were classified based on their individual time duration. The duration wise analysis showed that there were five different procedures in the study. These included 10, 15, 30, 40 and 70. The excluded data was also recorded the study. The time wise distribution of procedures showed that 30 minutes procedures were the mostly prescribed procedures followed by 40 minutes procedures.

Table 1 Duration wise distribution of procedures

S.NO	PROCEDURES	FREQUENCY
1	**GANDUSH 10**	66
2	**NYAS 15**	81
3	**SJK 30**	292
4	**SNEHAN-SWEDHAN 40**	327
5	**30+40 =70**	80
6	**NA**	71
	Total	917

The distribution of the time wise summarized procedures as Gandush 10 minute procedure. Nasya 15 minute procedure. The 30 minute procedures showed five variations with four Basti's and one Snehan-swedan of 40 minutes.

Table 2 Clinical distribution of procedures

S.NO	PROCEDURE TIME	DESCRIPTION	FREQUENCY
1	10	GANDUSH	66
2	15	NYAS	81
3	30	Basti, SiroDhara	292
4	40	Snehan-Swedan	327
5	70	30+40 min Procedure	80

6	NA	Not Applicable	71
	Total		917

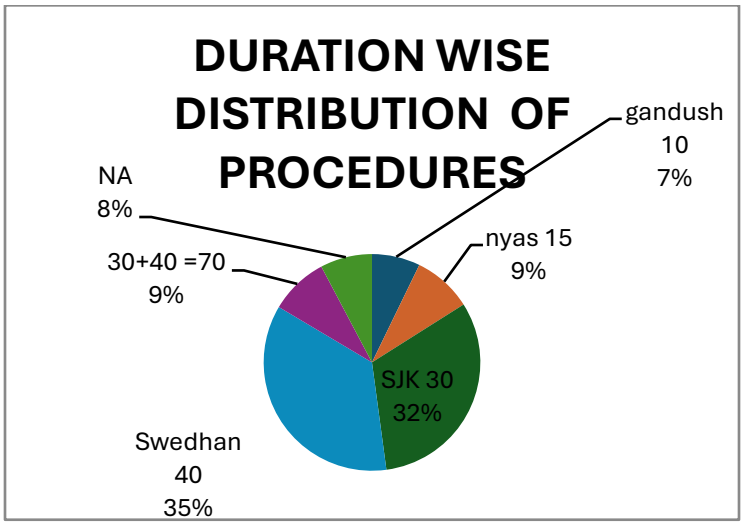
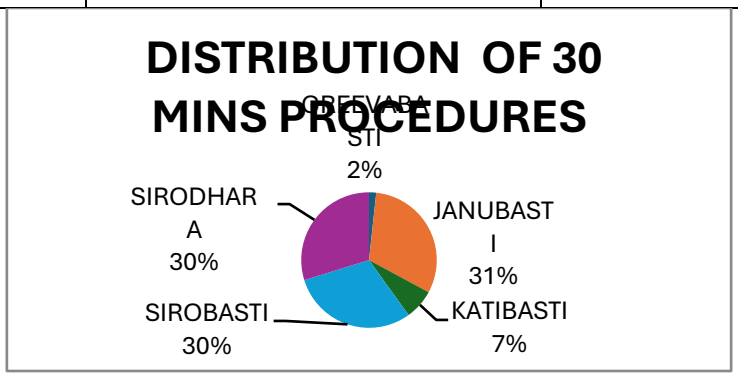


Table 3 Distribution of 30 minutes procedures

S.NO	PROCEDURE DISTRIBUTION	FREQUENCY
1	GREEVABASTI	5
2	JANUBASTI	91
3	KATIBASTI	21
4	SIROBASTI	88
5	SIRODHARA	87
	Total	292



The timings of procedures conducted in the study were recorded in a reporting form a which was latter analyzed by comparing it with standard time. The standard times of the procedures and the actual time in performing the procedure was analyzed by descriptive statistics and reported as mean values. The data is described as under

Table 4 Descriptive analysis of procedures

S.NO	PROCEDURE TIME	DESCRIPTION	FREQUENCY	Mean
1	10	GANDUSH	66	18.18
2	15	NYAS	81	17.65
3	30	Basti, Dhara, Swedhan	292	40
4	40	SWEDHAN	327	44
5	70	30+40 min Procedure	80	74
6	NA	Not Applicable	71	NA
	Total		917	

The descriptive analysis showed that higher time was taken in procedures as compared to standard specific times. The time was approximately 8 minutes higher for procedures of 10 min and 15 min duration. For procedure of 30 minute the delay was of 10 mins. However for the procedures is of longer than 30 mins or it is a combined one then the mean delay from the standard was only of 4 minutes.

The timing of the tests namely gandush, nasya, snehan-swedhan and combined were analyzed by one sample t test and the test value was compared with standard values of 10 15 and 30 minutes for gandush, nasya and snehan-swedhan respectively. The results of the stats showed that the data were statically significant at p value 0.05.

Gandush T Test Result

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
TIME	66	12.42	3.535	.435

One-Sample Test

	Test Value = 10					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
TIME	5.572	65	.000	2.424	1.56	3.29

Analysis of 30 min tests

The 30 min tests data was analyzed based on the five different procedures of standardized 30 mins. These were greevabasti, janubasti, katibasti, sirobasti, and sirodhara. All these tests were analyzed by one way annova test. The results of the test were statically significant at p value of .05.

Descriptives

TIME

		N	Mean	Std. Deviation	Std. Error	95% Confidence ... Lower Bound
Greevabasti		5	40.00	.000	.000	40.00
Janubaasti		91	38.85	10.357	1.086	36.69
Katibasti		21	53.57	5.278	1.152	51.17
Sirobasti		88	38.41	10.921	1.164	36.10
Sirodhara		87	39.08	10.607	1.137	36.82
Total		292	39.86	10.895	.638	38.61
Model	Fixed Effects			10.269	.601	38.68
	Random Effects				2.357	33.32

Descriptives

TIME

		95% Confidence ... Upper Bound	Minimum	Maximum	Between-Component Variance
Greevabasti		40.00	40	40	
Janubaasti		41.00	30	60	
Katibasti		55.97	45	60	
Sirobasti		40.72	30	60	
Sirodhara		41.34	30	60	
Total		41.12	30	60	
Model	Fixed Effects	41.05			
	Random Effects	46.41			18.406

Test of Homogeneity of Variances

TIME

Levene Statistic	df1	df2	Sig.
10.379	4	287	.000

ANOVA

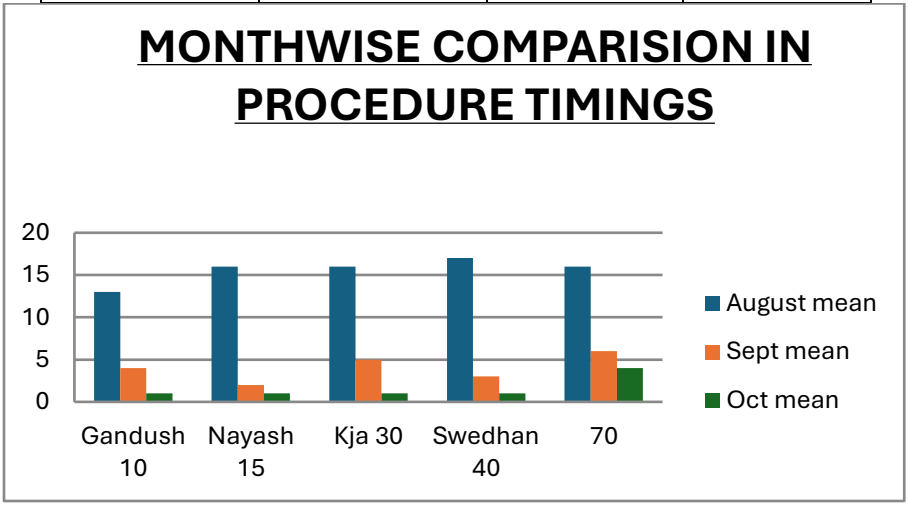
TIME

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4279.822	4	1069.956	10.146	.000
Within Groups	30264.699	287	105.452		
Total	34544.521	291			

The timing comparison of the five procedures was done through descriptive statistics and the mean value was used for comparison of the procedures. The mean value was higher in august for the five procedures which decreased highest for 70 min combined procedure. And lowest drop of 4 for 15 min procedures. The details are described in the table as under-

Table 5- MONTHWISE COMPARISION IN PROCEDURE TIMINGS

	August mean	Sept mean	Oct mean
Gandush-10	16	11	10
Nayash -15	20	16	15
Kja - 30	52	33	30
Swedhan 40	55	42	40
70	86	75	70
NA	19	17	35

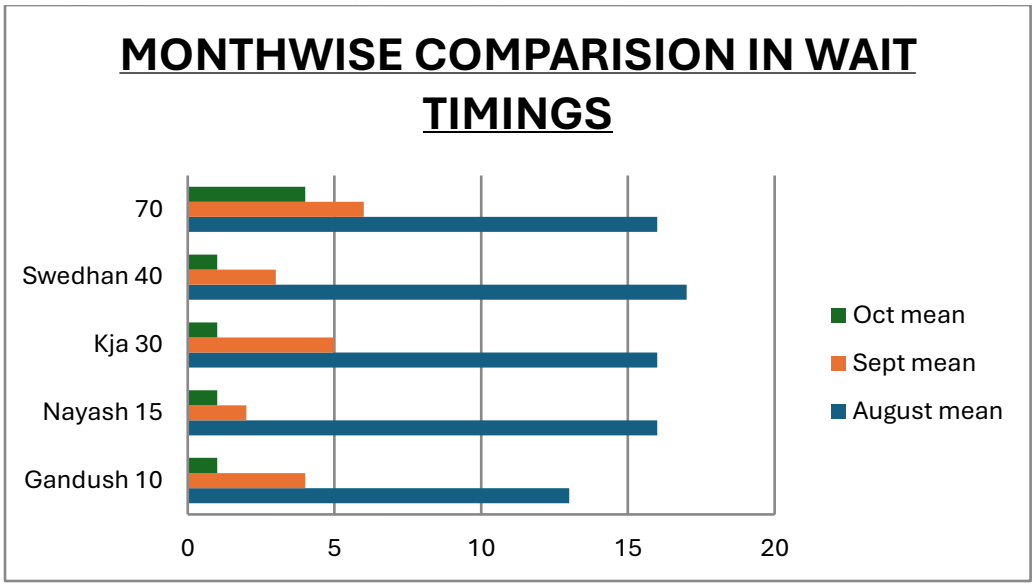


WAITING TIME ANALYSIS

The waiting time analysis across the five procedures was done through descriptive statistics and the mean value was used for comparison of the procedures. Maximum drop was reported for 15 min procedure followed by Swedhan. The details are described in the table as under-

Table 6- MONTHWISE COMPARISION IN WAIT TIMINGS

Timings delay	August mean	Sept mean	Oct mean
Gandush 10	13	4	1
Nayash 15	16	2	1
Kja 30	16	5	1
Swedhan 40	17	3	1
70	16	6	4

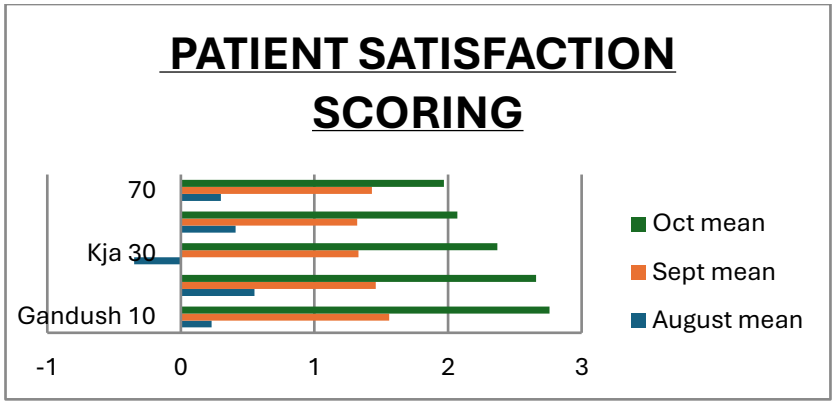


PATIENT SATISFACTION ANALYSIS

The patient satisfaction analysis across the five procedures was done through descriptive statistics and the mean value was used for comparison of the procedures. Maximum rise was reported for 10 min procedure followed by 15 min procedure. The details are described in the table as under-

Table 7- MONTHWISE COMPARISION IN PATIENT SATISFACTION SCORING

	August mean	Sept mean	Oct mean
Gandush 10	0.23	1.56	2.76
Nayash 15	0.55	1.46	2.66
Kja 30	-0.35	1.33	2.37
Swedhan 40	0.41	1.32	2.07
70	0.3	1.43	1.97



The improvement in the activity of the staff was conducted though the paired sample t test where the scores prior to training were taken as pre scores and scores taken after training were taken as post scores. The pre-score was taken at August September and October 2024

The mean values of competency score is reported during the study. This shows that there is an

improvement in the activity of the staff by the inclusion of training schedule to the hospital staff.

The patient satisfaction was also assessed by a format of patient satisfaction that has 5 points with scoring of 1 for yes and scoring of 0 for no. The value of satisfaction was calculated by computing the aggregate sum of the response in which higher values reported higher satisfaction and vice versa.

Patients Statistcation enrolled	**August Mean score**	**September Mean score**	**October Mean score**
134	0.402985	1.097014925	2.641791

Paired Samples Statistics

		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Augustscore	.40	132	.507	.044
	September	1.11	132	.826	.072

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	augustscore & september	132	.109	.214

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	augustscore - september	-.712	.921	.080	-.871	-.554	-8.886	131	.000

The staff satisfaction among 4 staff members three therapist and a staff helper was also assessed by a format of patient satisfaction that has 5 points with scoring of 1 for yes and scoring of 0 for no. The value of satisfaction was calculated by computing the aggregate sum of the response in which higher values reported higher satisfaction and vice versa. The values were analyzed statically by paired sample t test pre and post form. The result were found significant statically at p value .05.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Prevalue	2.0000	12	1.41421	.40825
	Postvalue	3.1667	12	1.40346	.40514

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	prevalue & postvalue	12	.916	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	prevalue - postvalue	-1.16667	.57735	.16667	-1.53350	-.79984	-7.000	11	.000

Table 8- AUGUST TIMING OF PROCEDURES

August 2024	**STANDARD TIME**	**Timetaken**	**Patient waiting time**	**Patient satisfaction**	
Gandush 10 total	210	350	285	5	
Gandush mean	10	16.66667	13.57143	0.238095	
Nyas 15 total	540	720	590	20	
Mean	15	20	16.38889	0.555556	
KJA	3510	6130	1920	42	
Mean	30	52.39316	16.41026	-0.35897	
Snehswedahn	3280	4525	1400	34	
Meansnswedahn	40	55.18293	17.07317	0.414634	
70	700	860	160	3	
	70	86	16	0.3	
NA					19

Table 9- SEPTEMBER TIMING OF PROCEDURES

September 2024	**STANDARD TIME**	**Timetaken**	**Patient waiting time**	**Patient satisfaction**	
Gandush total	**230**	**240**	**110**	**36**	
Mean	**10**	**10.43478**	**4.782609**	**1.565217**	
Nasya total 15	**420**	**460**	**65**	**41**	
mean	**15**	**16.42857**	**2.321429**	**1.464286**	
KJA	**2880**	**3195**	**475**	**128**	
mean	**30**	**33.28125**	**4.947917**	**1.333333**	
Snehanswedahn	**5120**	**5380**	**440**	**169**	
Mean	**40**	**42.03125**	**3.4375**	**1.320313**	
70	**2240**	**2402**	**195**	**46**	
	70	**75.0625**	**6.09375**	**1.4375**	
NA					17

Table 10- OCTOBER TIMING OF PROCEDURES

October 2024	**STANDARD TIME**	**Timetaken**	**Patient waiting time**	**Patient satisfaction**	
Gandush total	**210**	**210**	**25**	**58**	
Mean	**10**	**10**	**1.190476**	**2.761905**	
Nasya total 15	270	270	30	48	
Mean	15	15	1.666667	2.666667	
KJA	**2490**	**2490**	**135**	**197**	
Mean	**30**	**30**	**1.626506**	**2.373494**	
Snehanswedahn	**4560**	**4560**	**125**	**237**	
Means	40	40	1.096491	2.078947	
70	2660	2660	180	75	

	70	70	4.736842	1.973684	
NA					35

Table 11- MONTHWISE COMPARISION IN PROCEDURE TIMINGS

	August mean	Sept mean	Oct mean
Gandush 10	16	11	10
Nayash 15	20	16	15
Kja 30	52	33	30
Swedhan 40	55	42	40
70	86	75	70
Na	19	17	35

Table 12- MONTHWISE COMPARISION IN WAIT TIMINGS

Timings delay	August mean	Sept mean	Oct mean
Gandush 10	13	4	1
Nayash 15	16	2	1
Kja 30	16	5	1
Swedhan 40	17	3	1
70	16	6	4

Table 13- MONTHWISE COMPARISION IN PATIENT SATISFACTION SCORING

	August mean	Sept mean	Oct mean
Gandush 10	0.23	1.56	2.76
Nayash 15	0.55	1.46	2.66
Kja 30	-0.35	1.33	2.37
Swedhan 40	0.41	1.32	2.07
70	0.3	1.43	1.97

From the above findings we can conclude that there is a marked improvement in the time management of panchkarma therapies, patient satisfaction and employee satisfaction after the implementation of PDCA.

DISCUSSION

Purpose and Key Findings

The primary objective of this study was to evaluate the impact of improved time management with the help of implementation of PDCA tool on the delivery of Panchakarma therapies in a hospital encompassing study of three-month period. After following a structured observational phase of 1 Month 1, and subsequent phases of implementation of plan and monitoring of 2 months imply that there was a significant improvement in time management. The improvement in process timings was also reported from studies done by and in hospital scenarios

(Goenka A, 2024, Roopashree 2014) In addition, notable improvement was seen in patient and employee satisfaction. The studies done by *et al.,* showed the improvement in employee satisfaction. (Yadav, etal 2017). Basti is regarded as efficient procedure for all types of vata disorders. Basti treatment was employed in our study in five forms greevabasti, janubasti, katibasti, sirobasti, and sirodhara of duration 30mins taken as standard. (Singh,2015, Mangal etal.,2019)

Interpretation

During the observation phase many factors were noticed that were hampering in the efficient functioning and time management of the panchakarma therapies. Various for mismanagement of time reasons were observed -

- Lack of punctuality in the staff they were not coming on time
- Not starting the therapy in scheduled time
- Absence from work as staff was on leave
- No substitute for the absent staff
- Understaff as per the patient load
- Shortage of therapy room as per patient load
- Overstretching the time of the therapy
- Delay in preparation of medicine and therapy room
- Miscommunication within the staff regarding the therapy and its time schedule,
- Miscommunication between the staff and the patient regarding their therapy time schedule
- Patients lack of punctuality as they were not coming on their given time.

After the observation a systematic plan was made for the improvement in time management and systematic restructuring of therapy schedules. Main strategy focuses on –

- Increasing Human resource – one therapist and one kitchen helper was deployed to the panchkarma department.
- Allocation of one extra therapy room with equipment's like table, swedan box etc.
- Training of the staff – staff was educated about the time management, about the ideal time in which therapy should be performed, prioritization of work one day before, notifying any requirement regarding medicine preparation, or equipment's a day before to prevent delays,
- Making a timetable for therapy slots helps in optimizing therapy slot allocation
- reducing delays between treatment phases, and
- Improvement in coordination between the staff.
- Notifying patients about their therapy schedule one day earlier.
- Improvement in communication between the staff and the patients.
- Patients were asked to come to hospital on time and also to pre inform the staff via phone call about their delay or unavailability in the dedicated time.
- This improved efficiency not only allowed for more therapies to be conducted within the available time but also resulted in smoother transitions between patients, reducing waiting times and enhancing patient flow.

All the adjustments made helped in improving the time management of the panchakarma therapies. Also contributed to increase in the satisfaction of the patient, as patients experienced shorter waiting times, more consistent therapy schedules as therapy timings were told beforehand and a smoother treatment process with better efficiency. Addition of therapist also solved the problem of increased wait timing. On the other hand, employee satisfaction, was improved due to better work environment as there was increase in one therapy room with equipment and one therapist which helped in decreasing the stress, a systematic load distribution, and clarity about the timings of operational procedures. With the addition of staff in the kitchen has also helped in time management and reducing the workload. Earlier the preparation of medicine was also done by the therapist only which was time consuming and was the reason for extra delay. Therapist were able to complete their therapies on time which helped them getting time for rest and also get rid of their extra duty hours. The directness of roles and responsibilities helped in reducing the operational burden on staff, allowing them to focus more on efficient care delivery without compromising with the quality. Overall, it helped in boosting employee satisfaction, improving in their work life balance and also improving their skill in efficient delivery of therapy. The same results in behaviour satisfaction and efficiency improvements were reported from the study done by Yadav and colleagues in hospital setting. (Yadav *etal.,*2017)

CONCLUSION

The study reflected that PDCA implementation can improve panchakarma process in an ayurvedic hospitals. The study could be extrapolated by

including other parameters. The study highlight's role of time management in improving operational efficiency of hospital as well as also for satisfaction of patient and well-being of employee. Ayurveda Hospitals and centres which are offering Panchakarma therapies may get benefit from adopting structured time management protocols and regular monitoring to maintain a balance between treatment efficacy and operational efficiency. This study suggests that improvements in therapy management and scheduling can lead to better patient outcomes, efficient delivery of therapies, and lesser work stress, higher satisfaction of both patient and employee, and more effective use of resources.

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