



TO STUDY THE PEER ASSESSMENT OF CLEANLINESS AND INFECTION CONTROL PRACTICES IN CIVIL HOSPITAL USING KAYAKALP TOOL IN HILLY STATE OF INDIA

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ABSTRACT

Background: Kayakalp was launched by the Ministry of Health & Family Welfare, Government of India on 15th May 2015 as a National initiative to give awards to those public health facilities that demonstrate high level of cleanliness, hygiene and infection control. Cleanliness and hygiene in hospitals is very much essential to prevent hospital acquired infections. Our aim was to study the situational analysis of the health institution using Kayakalp tool; to assess the level of cleanliness, hygiene and infection control practices and the status of Bio-medical waste management in the health care facility and to suggest remedial measures based on the study finding. **Aim and Objectives:** To analyse the impact of implementation of Kayakalp guidelines on cleanliness, hygiene, biomedical waste management and infection control practices in the hospital and inside hospital boundary. **Methods:** It is a cross sectional observational study conducted in Civil Hospital during a period of two years from 2019-20 to 2020-21 by using Kayakalp assessment tool for analysis. **Results:** After post intervention the areas which showed major improvements after the implementation of Kayakalp in 2020-21 were Hospital Upkeep (score increased by 91%), Sanitation and Hygiene (score increased by 88%), Bio Medical Waste and Infection Control (score increased by 85%), Supportive Services and Hygiene Promotion (score increased by 84 %). **Conclusion:** Checklist of 'Kayakalp' can make a huge impact in larger objective of Cleanliness and hygiene in hospitals with regular periodic monitoring. Sanitation and Infection Control Team are satisfied that consistently high standards are being maintained.

KEYWORDS: Kayakalp, Swachh Bharat Abhiyaan, BMW-Bio Medical Waste, ICC-Infection Control Committee.

INTRODUCTION

The Swachh Bharat Abhiyan launched by the Prime Minister on 2nd October 2014, focuses on promoting cleanliness in public spaces. Kayakalp is a national initiative launched by Ministry of Health and Family Welfare (MoHFW) on 15th May 2015 under Swachh Bharat Abhiyan to promote those public health facilities that demonstrate high levels of cleanliness hygiene and infection control and enhance the quality of healthcare facilities in India.^[1] Public health care facilities are a major mechanism of social protection to meet the health care needs of large segments of the population. Cleanliness and hygiene in hospitals are critical to prevent infections and also provide patients and visitors with a positive experience and encourages moulding behaviour related to clean environment. As the first principle of healthcare is "to do no harm" it is essential to have our health care facilities clean and to ensure adherence to infection control practices. Maintenance of cleanliness and hygiene in hospitals is necessary with

strict adherence to the guideline for infection control practices.^[2] The purpose of this initiative is to appreciate and recognise the healthcare organizations effort in creating a healthy environment. The initiative is to promote Cleanliness, Hygiene and Infection Control which creates and share sustainable practices related to improved cleanliness in healthcare facilities linked to health outcomes. World Health Organization has defined quality of care as the extent to which health care services provided to the individuals and patient populations improved desired health outcomes.

The main objectives of the Kayakalp initiative are to promote cleanliness, hygiene, infection control practices in public health care facilities. At the same time to incentivize and organize such public health care facilities that show exemplary performance in adhering to the standard protocols of cleanliness and infection control. To inculcate a culture of ongoing assessment and peer review of performance related to hygiene, cleanliness

and sanitation to create and share sustainable practices related to improve cleanliness in different health care facilities to have a positive health outcome.

AIM: To analyse the impact of the implementation of Kayakalp guidelines on the cleanliness and infection control practices in the hospital.

OBJECTIVES: The main objectives of the study were

- 1) To implement Kayakalp- Swacchta guidelines in Civil Hospital Sarkaghat.
- 2) To evaluate the impact on implementation of the guidelines on cleanliness, hygiene, biomedical waste management and infection control practices in the hospital and inside hospital boundary.

ETHICAL APPROVAL: The approval to conduct the study and publish the research findings was obtained from the institutional head and Secretary (Health), Government of Himachal Pradesh wide letter no. Health-A-B (15)3/2021-2757.

MATERIAL AND METHODS

A cross sectional observational study was conducted in Civil Hospital Sarkaghat in District Mandi during the period 2019- 2020 and 2020 –2021 for an assessment by using the “Kayakalp” tool. Assessment method of study was based on Direct Observation (information is gathered through direct observation i.e., level of cleanliness, display of protocols, landscaping, signages), Staff Interview (Information is obtained by interaction with concerned staff to understand the current practices being undertaken, competencies of various types like wearing gloves, hand-washing and cleaning of floors), Review of Records & Documents (records available at the facility. eg: Availability of housekeeping checklist, BMW management registers, culture report for microbial surveillance, meetings of Infection Control Committee (ICC). Scores given were two for full compliance, one for partially compliance and zero for non-compliance.^[3] The observations & documentations were conducted using a check list provided under Kayakalp Programme. The scoring for various areas of concern is based on a Kayakalp checklist for quality assessment. Data was collected Initially prior to the training, based on all the thematic areas and scores were applied using the study instruments during the year 2019-20. After the doctors, staff nurses, had undergone orientation training regarding Kayakalp at Distt. hospital, they further provided training to all the peon and safai karamchari of the Civil Hospital. In a similar way to the previous year, data was again collected in 2021 and scores in different activities were given. The Pre and Post intervention studies were done to evaluate the impact of implementation on Kayakalp guidelines. Pre-intervention study is done to assess the status of cleanliness and analyze the gaps. The identified gaps were fulfilled by special action. The post-intervention study was carried out to understand the impact caused by the implementation of the guidelines in

the Civil Hospital on cleanliness, hygiene, infection control and biomedical waste management etc.

The data scores for various areas of concern based on a checklist for quality assessment was entered and analysed with IBM SPSS version-21. Pre and post training scores of the two different time period were compared. Statistical package like Paired “t” test was applied. An assessment protocol and scoring system for kayakalp includes 3 categories i.e., 1: Thematic area, 2: Criteria, 3: Checkpoint. The thematic area includes broader aspect of swachhta, called as pillars of Kayakalp namely, A – Hospital upkeep, B- Sanitation & hygiene, C- Waste management, D- Infection control, E-Support services and F- Hygiene Promotion. The assessment process of Kayakalp includes four steps: a) Preliminary Internal Assessment, b) Final Internal Assessment, c) Peer Assessment and d) External Assessment. After reviewing these four steps by the external agency, the facilities are ranked based on scores obtained and one obtaining maximum scores are declared the winners and awarded accordingly. Achieve at least 70% score in the criteria during the peer assessment process. Results presented here are carried out by peer assessment.

RESULTS

Table 1 Scoring pattern in hospital upkeep for different parameters maintenance in the CH Sarkaghat from A1 to A10 includes pest and animal control, landscaping to workplace management whereas the maximum score allotted against each parameter is 10 and total score is 100. In this study total scores obtained in 2019-20 was 73 and for the year 2020-21 was 91. There was an increase of total score in the year 2020-21 and it was found to be statistically significant. This shows that there was an increase in the level of hospital upkeep maintenance in the year 2020-21 compared the previous year 2019-20 because of orientation training. Initiatives have been taken by the hospital for gardening, cleaning of open areas of the hospital, facility for water conservation and maintenance of furniture etc.

Table 2 shows scoring pattern for different parameters from B1 to B10 adopted for maintenance of sanitation and hygiene, includes cleanliness of circulation area to drainage & sewage management. The maximum score against each parameter is 10, out of total score of 100. In the year 2019-20 and 2020-21 an assessment on the different parameters was done the score level was 72 in (2019-20) and 88 in 2020-21. The difference in the score obtained was found statistically significant (p=0.000). In the year (2020-21) the score obtained was higher i.e. 88 than the previous year due to proper cleaning and maintenance of the toilets, wards, patient circulation areas, ambulatory areas like OPD, laboratory, procedure areas as well as standard cleaning procedure was followed. A committee had been constituted in the hospital for periodic monitoring of the cleanliness activities.

Table 1: Scoring pattern in hospital upkeep.

S. No.	Parameters	Max. Score	Scores 2019-20	Scores 2020-21	Significance
A1	Pest & animal control	10	8	9	t=6.467 df=18 p=0.000 Significant
A2	Landscaping & gardening	10	7	9	
A3	Maintenance of open areas	10	7	9	
A4	Hospital / Facility appearance	10	9	10	
A5	Infrastructure maintenance	10	7	9	
A6	Illumination	10	8	9	
A7	Maintenance of furniture & fixtures	10	7	9	
A8	Removal of junk material	10	6	9	
A9	Water conservation	10	7	9	
A10	Workplace management	10	7	9	
	Total	100	73	91	

Table 2: Scoring pattern in sanitation and hygiene.

S. No	Parameters	Max. Score	Scores 2019-20	Scores 2020-21	Significance
B1	Cleanliness of circulation area	10	8	9	t=5.003 df=18 p=0.000 Significant
B2	Cleanliness of wards	10	7	8	
B3	Cleanliness of procedure areas	10	8	9	
B4	Cleanliness of ambulatory areas (OPD, Emergency Lab)	10	8	9	
B5	Cleanliness of auxiliary areas	10	7	9	
B6	Cleanliness of toilets	10	7	9	
B7	Use of standards materials & equipment for cleaning	10	8	9	
B8	Use of standard methods cleaning	10	7	8	
B9	Monitoring of cleanliness activities	10	5	9	
B10	Drainage & sewage management	10	7	9	
	Total	100	72	88	

Table 3: Scoring pattern in biomedical waste management.

S. No.	Parameters	Max. Score	Scores 2019-20	Scores 2020-21	Significance
C1	Segregation of BMW	10	7	9	t=2.632 df=18 p=0.017 Significant
C2	Collection & transportation of BMW	10	8	9	
C3	Sharp management	10	5	7	
C4	Storage of BMW	10	7	8	
C5	Disposal of BMW	10	8	9	
C6	Management of Hazardous Waste	10	4	8	
C7	Solid general waste	10	8	9	
C8	Liquid waste management	10	5	7	
C9	Equipments & supplies	10	8	9	
C10	Statutory compliance	10	9	10	
	Total	100	69	85	

Table 4: Scoring pattern in infection control.

S. No	Parameters	Max. scores	Scores 2019-20	Scores 2020-21	Significance
D1	Hand hygiene	10	8	10	t=3.587 df=18 p=0.002 Significant
D2	Personal protective equipment (PPE)	10	8	9	
D3	Personal protective practices	10	7	9	
D4	Decontamination cleaning of instruments	10	8	9	
D5	Disinfection & sterilization of instruments	10	7	8	
D6	Spill management	10	4	8	
D7	Isolation & barrier nursing	10	7	9	
D8	Infection control programme	10	6	8	
D9	Hospital acquired infection surveillance	10	5	7	
D10	Environment control	10	7	8	
	Total	100	67	85	

Table 5: Scoring pattern in support services.

S. No	Parameters	Max. score	Scores 2019-20	Scores 2020-21	Significance
E1	Laundry services & linen management	10	7	8	t=2.192 df=8 p=0.060 Non-Significant
E2	Water sanitation	10	8	9	
E3	Kitchen Services	10	7	9	
E4	Security services	10	6	7	
E5	Out-sourced service management	10	8	9	
	Total	50	36	42	

Table 6: Scoring pattern in hygiene promotion

S. No	Parameters	Max. score	Scores 2019-20	Scores 2020-21	Significance
F1	Community monitoring & patient participation	10	4	7	t=3.122 df=8 p=0.014 Significant
F2	Information education & communication	10	7	9	
F3	Leadership & teamwork	10	6	9	
F4	Training & capacity building & standardization	10	7	9	
F5	Staff hygiene & dress code	10	7	8	
	Total	50	31	42	

Table 3 deals with the biomedical waste management of parameters from C1 to C10 include segregation BMW to statutory compliance. A total of 10 parameters includes 10 ranks each. On assessment in the year 2019-20, the total score obtained was 69 and in the year 2020-21 it was 85. There was a statistically significant increase in the scores ($p=0.017$) obtained in the year (2020-21). Increased in the score was because the staffs were oriented properly regarding segregation and collection, storage, transport and disposal of different infectious as well as hazardous wastes. For liquid waste management provision for a septic tank was made as per the guideline. Although the scoring for sharp waste management was improved, but the staff were not aware properly about the PEP (post exposure prophylaxis) for accidental needle stick injury.

Table 4 deals with infection control measures adopted in the institution. The different parameters include hand hygiene, personal protective equipment (PPE) to environmental control. The maximum score of 10 in each parameter and the total maximum score is 100 which include all the 10 parameters. Interestingly, on assessment the score obtained was 67 in the year (2019-2020) and 85 in the year 2020-21. There was a significant increase in the score for the year (2020-2021) ($p=0.002$). This was due to awareness among the staff regarding personal protective practices and use of PPE during any kind of hospital procedures as well as strict adherence to hand hygiene. There was restriction to the visitors & external foot wears to the isolation and critical areas. Similarly, the staffs were also aware about spill management. Spill management kit was available. Raghuvansi et al in her study revealed that majority 489 (80%) of respondents said that they maintained a record of sterilization and only 125 (20%) said that did not maintain any record.

Support services (E) in Table 5 depicts that there are 5 parameters from laundry services & linen management to outsourced service management. Each parameter is given a maximum score 10 and a total of 50 is the maximum score. In the year 2019-20 the total score obtained in regard to support service was 36 and in the year 2020-21 was 42 and the Score was not satisfactory due to unavailability of kitchen services, security services also proper laundry services.

Table 6 on hygiene promotion includes 5 parameters. Each is given a score of 10 and maximum of 50 is the marks out of which in the year (2019-20) 31 was obtained and in the year (2020-21) 42 was obtained. The field of hygiene promotion was also lagging due to improper monitoring and deficit in routine review of the cleanliness initiatives. No feedback system was there for the public regarding maintenance of cleanliness of the facility. IEC display regarding use of toilets, maintaining hygiene and its importance were not in place.

DISCUSSION

Average Kayakalp score obtained in 2019-20 was 69.6. Total Average score for 2020-21 was 86.6. Amount of BMW generated in the hospital on an Avg. 4.5 kg – 5 kg per day. Segregation of waste was performed in appropriate colour coding bags at the site of origin. Separation of infectious waste and general wastes were followed in all working areas. All staff was aware of the segregation protocols. The score for “collection and transportation” on BMW as 8 in 2019 and 9 in 2020- 21, showing minimal deficit in the system. Management of sharps has a good score of 60% in the hospital for year 2020-21 showing improvement as compared to previous year. Similarly significant improvement was noticed in case of hazardous waste and liquid waste management. A septic tank has been constructed inside the hospital campus for treatment of infected liquid waste before disposal. Raghuvanshi et al in her study aimed to obtain

information about knowledge, execution and attitude towards (BMW) biomedical waste and its management between dentists associated with the institution and private practitioners.^[4] In the study 76% of respondents were not aware that untreated human and anatomical waste should not be stored for >48 hrs. Awareness of different categories of the waste was as high as in 549(89%) of respondents. A total of 468 (76% respondents) segregated waste before disposal whereas 146(24%) did not segregate. Regarding human anatomical waste, 298 (48%) respondents were aware of its disposal in the yellow-colored non-chlorinated plastic bag, whereas 316 (51%) were not aware. Regarding sharps & needles, 513(84%) respondents gave correct answer of disposal. Chudasana et al in his study at Rajkot revealed that 102(97%) paramedics-maintained records on BMW at work place, 102 (97%) practiced disinfection and segregation of BMW at work place. 103 (98%) were using personal protective measures while handling BMW.^[5] This was significantly more than the doctors. In this same study, 76.4% of resident doctors had heard about BMW rules. Another study conducted at Delhi by Saini S had similar results.^[6]

Another similar study done at Agra by Sharma et al represented lack of knowledge about the legislation among health personnel.^[7] In the study, in the third stratum (private health care facilities) out of 82 personnel, 14 (17.07%) were only aware of BMW rules. There can only be improvement if the importance of training on sanitation, hygiene practices, cleanliness and BMW management in a health care facility is emphasized. Besides this these training sessions should not merely be a onetime activity instead it should be continuous cyclical process with inclusion of pre and post-test training questionnaire. There should be in-house training for health care personnel and which should be made compulsory from accredited training centers. Mohapatra et al in his study undertaken on doctors by an online snapshot assessment found that (75%) of medical graduates had proper adequate up to date knowledge on BMW than the post graduates. It was significantly higher ($p<0.001$) among under graduate students. It was probably due to education regarding BMW which was incorporated in Community Medicine Class. Hence their knowledge was most updated.^[8] Mir et al in his cross-sectional study found that there was a higher level of awareness, attitude as well as practice adopted regarding biomedical waste management concept for the injury report which was as low as 30%.^[9] In a hospital the nursing professionals form the backbone of any hospital and play a vital role in imparting health services i.e., protection, prevention, promotion and treatment. It is good that their level of knowledge can help towards safe disposal of hazardous wastes. Anand et al in a similar study on health personnel in a teaching institution in Haryana found that doctors, nurses and lab technician had good knowledge, attitude and practice regarding biomedical waste management, however it was found to be very low in class IV employees.^[10]

CONCLUSION

Newer approaches and innovative tools like checklist of 'Kayakalp' can make a huge impact in larger objective of infection control as standardized procedures and guidelines for infection control. The SOP (Standard operative procedure and defined management techniques like TQM (total quality management) needs to be highlighted and with supportive supervision. Poster exhibition, pictorial representation, seminar, exhibition must be organized in these hospitals. Regular sensitizations and trainings of health care providers can play a bigger role for qualification in final assessment. Peer assessment is an integral component of internal validation of scores along with shared experiences, gaps identified and innovations for further improvement at all institutions.

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