



Original Article

Transforming Health Care Services through Knowledge Management during COVID-19 in India

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ABSTRACT

Knowledge management (KM) is considered to be an important intervention in improving health care services. KM facilitates the transfer of the existing knowledge and the development of new knowledge in the health care sector. The relevance of knowledge management in the healthcare sector cannot be ignored due to the dynamic and sensitive nature of knowledge within the healthcare sector which leads to the smooth conduct of business for the health and the other operational issues in the hospitals. As the health care sector is a knowledge-intensive industry, systematic, and appropriate dissemination of knowledge leads to a competitive advantage. Its importance was realized more during the COVID-19 due to the acute shortage of medical facilities and doctors. This inspired the authors to undertake the present study. The broad objectives of the study were to understand the role played by knowledge management in transforming health care services, to suggest measures based on the findings, and to contribute to the existing literature. The sample size was considered to be 167, which included 83 males and 84 females. The study was conducted with four parameters such as the impact of knowledge management on the performance of the health care sector, the impact of knowledge management on paramedics' performance, the impact of knowledge management on patients care, service, and satisfaction and COVID-19 as well as Omicron related variables. It was observed that all the attributes of knowledge management played an important role in providing health care services at the right time to the needy people for the overall interest of society, as a whole.

GRAPHICAL ABSTRACT



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Introduction

Severe acute respiratory syndrome Corona virus 2 (SARS-CoV-2), which causes coronavirus disease (COVID-19), was first identified in December 2019 in Wuhan city, China, and later it was spread to many provinces in China. As of May 8th, 2020, the World Health Organization (WHO) had documented 3,759,967 positive COVID-19 cases, and the death toll attributed to COVID-19 had reached 259,474 people worldwide. On January 30th, 2020, the WHO declared COVID-19 as a Public Health Emergency of International Concern [1A]. This pandemic forced to revisit the existing medical infrastructure in India as well as the global context. The present work tries to understand the relevance of Knowledge Management during the pandemic.

Today, healthcare delivery has become an important challenge which distresses countries worldwide. With the increased factors like higher costs, inefficiency, and social pressure to provide better quality healthcare services, the healthcare providers are searching for new interventions to improve healthcare delivery [1]. The Knowledge management (KM) interventions in healthcare are motivated by the fact that healthcare is a knowledge-based community in which knowledge is a critical commodity. Intangible assets such as know-how and social networks are of higher importance for creating a competitive edge than are the physical resources in an organization [2]. The health sector is widely witnessing a transformation in its systems and functionality. The New-born reform plans are being experienced, and the novel solutions are being embraced. This study is inspired by previous research introducing knowledge management as an intervention to improve healthcare delivery by focusing on the different practices KM provides for health professionals to collect, transfer, and utilize knowledge, as well as KM's influence on healthcare performance [3]. Knowledge management is defined as a process in which information communication technology (ICT) systems are applied to support the activities in organizing knowledge, experience, skills, and communication [4]. Knowledge management can be further defined as a

collaborative and integrated approach for creating, capturing, organizing, accessing, and using an organization's intellectual capital [5].

Health and social care are facing formidable challenges worldwide. The cost of care is rising, and in many countries, the population is aging, and thereby these issues lead to increase the need for health and social services. The innovative approaches and models are consequently needed to ensure the availability and quality of services. Thus, the purpose of this article is twofold. First, we follow the knowledge-based view of a firm [6] and suggest that knowledge management (KM), as an academic discipline and managerial practice, provides valuable perspectives and tools to help health and social care management to cope with the present and future challenges [7-8]. This is also a mounting challenge for health management and social care when the integration of services adds organizational complexity. Several authors [9] have argued that in a changing operating environment, the traditional decision-making structures and systems do not work optimally and thus more flexible organizational forms and knowledge strategies are needed [10]. KM increases health and social care organization understanding of service needs of citizens [11]. KM strategy develops the understanding of health organizations of the complex phenomena by increasing awareness of the changes in the operating environment [12]. KM supports cost control by identifying and capturing the best practices, improving efficiency, reducing medical errors, and declining waste in routine tasks [13]. The impact of KM on an organizational performance was observed through the mediating variable of dynamic capability [14]. KM improves decision-making process by providing faster and more accurate decision-making support [15]. KM promotes strategic planning with a continuous loop of sharing knowledge [16]. It improves the quality of services through the advance sharing knowledge [17]. KM further improves patient safety by increasing the innovative capabilities of the organization and reliability of information and knowledge [18]. It drives individual and organizational learning

[19], improves motivation, morale, commitment, and positive work behaviour by resolving tensions between employee empowerment and client care [13], and brings objectivity and clarity to risk management by addressing the complexity of risks in the organization [13].

Role of Paramedics

Paramedical staff includes individuals who are not qualified to practice, but trained to perform health care functions under the direct supervision of qualified physicians. The importance of paramedical staff is felt in every sphere of health care services including practices of medicine, nursing services, and public health services. These paramedical workers perform routine diagnostic procedures, such as taking blood samples, and therapeutic procedures, such as administering injections or suturing wounds; they also relieve physicians of making routine health assessments and taking medical histories. These paramedics can discharge their job with the help of knowledge management, especially during COVID-19. Through the initiatives of knowledge management, the dependency of these people on physicians has changed drastically which helped to avoid the loss of life and better health care services to needy patients. Likewise at the same time, the expert knowledge of the doctors is used for more and more quality services to people instead of routine practices.

Omicron

At this juncture, given the rising number of Omicron cases in some countries like South Africa and the UK, the Government of India has already given necessary directions to the hospital, healthcare professionals, and associations to raise awareness about COVID-appropriate behaviour which comprises two doses of vaccination coupled with mask, ventilation, social distancing, and hand hygiene. In addition, healthcare entities will have to be ready to cope with the likelihood of a hike in Omicron cases in January-February 2022 in guiding aspect of the experience of the second wave, as further they will intensify the vaccination drive pan India and administer the booster dose, as well. The government has increased the availability of both oxygenated and ICU beds in most hospitals.

The government has also increased the capacity of building and training of ICU staff and critical care teams in collaboration with various associations like the Indian Medical Association (IMA) and Pulmonary Association.

Meanwhile, the government started constituting third wave committee comprising experts from pediatrics and critical care pulmonology who will play a crucial role in close monitoring and analysis of cases. Besides that, all hospitals will assume the role of a vigilante in proactively sharing with the government the trends and patterns, as also changes in symptoms, and severity of cases based on the age groups and the other key factors as actionable input for making decision. The genomic surveillance committee will also continue to sequence samples to identify any new variants emerging during the critical phase. The country has gone through two waves of COVID and the government is taking firm steps to re-train health workers so they are physically, mentally, and sufficiently prepared. However, given the staff attrition at various levels, the country may still be underprepared from a manpower viewpoint. As the Omicron cases rise, the Government had decided on COVID-19 booster doses for healthcare, frontline workers, and senior citizens.

Literature Review

Sharing knowledge is vital for improving the performance of any organization. It assumes great importance in the health care sector because it contributes to patients care and safety in a significant manner [22]. By integrating people, processes, and technology in the healthcare sector and engaging knowledge management, it is expected that there would be improvements in the delivery of health care and the availability of experience, ideas, and the latest knowledge about the new developments in health care sector [21]. In the healthcare sector, KM aims at the integration of identification, acquisition, creation, preservation, dissemination, and application of various aspects of knowledge assets in healthcare organizations [23]. KM offers several benefits to the health care sector by reducing medical mistakes, increasing innovations, enhancing the quality of patient

care, ensuring cost-reduction, improving organizational learning, and organizing knowledge [24].

With the application of various techniques in the health care sector, the organization can be able to achieve alignment of business strategy with KM efforts and long-term strategic planning. It also facilitates the introduction of good policy incentives [25]. Various barriers such as the absence of KM integration, the desire of common definition, and confusion due to dissemination of wrong information can adversely affect the application of KM [20]. Inadequate technological services, absence of trust, lack of proper organizational policies, failure in the network, cultural deficit, redundant work, and the additional responsibilities are some of the impediments or obstacles faced while disseminating knowledge in the health care sector [26]. There are three KM models such as KM infrastructure, KM conceptualization, and total KM [27].

Building bridges to team-based care activities help ensure synergy and efficiency [28]. Workgroups emphasize the healthcare workforce and methods are explored to enhance care quality. In a healthy working environment, the better quality of patients care and improvement of the health of workers are ensured as both are mutually reinforcing [29]. The performance of the health system across the world is considerably improved under the public-private partnerships (PPP) model. Because this PPP model combines the positive features of both sectors which ultimately enhances quality, improves efficiency, and brings about innovation [30]. Nurses play a leadership role in inpatient care. Nursing activities aim to improve patient's comfort and health care by implementing goal-oriented interventions [31]. The leaders should move from the "individual expert" model and adopt a holistic model which combines the advantages of teams, boundary groups, various professions, and functions [32]. Up to now, well-being and health care sectors have taken a keen interest in applied management and scientific research [33]. The talent pool in the health sector is considered an important asset. Hence, health care organizations

are making a lot of efforts to develop human resources. The talent pool in these organizations creates and implements policies that will upgrade the knowledge base of the employees [34]. Paramedics try to gather information and the latest developments relating to COVID-19 from TV, newspapers, media, and social media platforms including the official websites of the health ministry [35, 36], the negative and positive influence of social media and mass media on health care workers during this pandemic. Social media acts as an effective tool to create awareness among the people to follow COVID-19 appropriate behaviour and quarantine protocols. This inspires confidence among people, reduces their fear, and strengthens trust in public health initiatives and methods [37]. If not properly handled, social media during this pandemic is being misused and a lot of misinformation is being communicated as there is little or no accountability [38]. Nursing staff as compared to non-nursing staff have more knowledge and awareness as they are in close contact with patients. A study has highlighted the inadequate knowledge of health care workers about COVID-19 [39].

Objectives of study

- To understand the role played by knowledge management in transforming health care services.
- To suggest measures based on the findings.
- To contribute to the existing literature.

Scope of study

The present study is restricted to paramedics and selected leading super specialty COVID hospitals in the capital city, Bhubaneswar, Odisha. The respondents include both male and female paramedic staff.

Materials and Methods

For the survey based study, questionnaires are distributed (the sample of the questionnaire is enclosed in the annexure-E) and the followed sampling technique is snowball and cluster. In the finalization of various attributes, 8 focus group discussions were carried out consisting of 7 members in each group. Initially, 27 variables were identified, but after the focus group

compilation of data, 19 variables were retained. The sample size was 167 including 83 male and 84 female respondents. The perception score method is being used.

Sample size

In the present study, the sample size was calculated in the ratio range of 1:4 to 1:10 (Rummel, 1970, Schwab 1980). As mentioned in the above method, the minimum sample size should be items multiplied by four and the

maximum should be items multiplied by 10. As we had taken 19 items for the study, the minimum and maximum sample sizes should be 76 and 190, respectively. After deleting the common outlier, we had taken 167 observations which fall within the minimum and maximum sample size as per the above rule. Taking into consideration the rule (Rummel, 1970, Schwab 1980), the sample size of 167 is adequate for our study.

Table 1: Sampling frame

Name of the Hospitals	Male paramedics in the age group of 20-40 years	Female paramedics in the age group of 20-40 years	Male paramedics in the age group of above 40 years	Female paramedics in the age group of above 40 years	Total
Kalinga Institute of Medical Sciences (KIMS)	8	9	6	5	28
Kalinga Hospital	7	7	8	5	27
Utkal Hospital	6	5	5	7	23
Aditya Care Hospital	6	6	7	9	28
Appolo Hospital	12	5	11	6	34
Sum Hospital	8	7	6	6	27
Total	47	39	43	38	167

Source: Primary data

Table 2: Summary of hospital wise response rate of the administrated questionnaires

Name of the Hospitals	Questionnaires administrated	Questionnaires duly completed	The response rate in %
Kalinga Institute of Medical Sciences (KIMS)	43	28	65.12%
Kalinga Hospital	51	27	52.94%
Utkal Hospital	42	23	54.76%
Aditya Care Hospital	46	28	60.87%
Appolo Hospital	51	34	66.67%
Sum Hospital	53	27	50.94%
Total	286	167	58.39%

Source: Primary data

Table 3: Schedule of research work

Progress of research work	Month-1				Month-2				Month-3				Month-4				Month-5			
	Weeks				Weeks				Weeks				Weeks				Weeks			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Conceptualizing and outlining the research work	█	█	█	█																
Extensive literature review					█	█	█	█												
Gap analysis and finalization of the research questions									█	█	█	█								
Data collection phase													█	█	█	█	█	█	█	█
Data analysis													█	█	█	█	█	█	█	█
Conclusion and finalization of the research paperwork													█	█	█	█	█	█	█	█

Calculation of Respondents' Perception: Maximum Possible Score and the Least Possible Score

Maximum Possible Score (MPS) is calculated by multiplying the number of respondents in such a category by (4) and the product with a total number of variables. The least Possible Score

(LPS) is calculated by multiplying the number of respondents in each category by (0) and the product with several attributes in the group or category.

Table 4: Computation of Maximum Possible Score (MPS) and the Least Possible Score (LPS)

Category	KM on the Performance of Health Care Services		KM on Paramedics' Performance		KM on Patients Care, Service, and Satisfaction.		Regarding COVID-19 Attributes	
	Maximum Possible Score	Least Possible Score	Maximum Possible Score	Least Possible Score	Maximum Possible Score	Least Possible Score	Maximum Possible Score	Least Possible Score
Male paramedics in the age group of 20-40 years	1032	0	688	0	688	0	860	0
Female paramedics in the age group of 20-40 years	936	0	624	0	624	0	780	0
Male paramedics in the age group of above 40 years	960	0	640	0	640	0	800	0
Female paramedics in the age group of above 40 years	1080	0	720	0	720	0	900	0

Table 5: Analysis Table

Attributes	Aggregate weighted score							
	Male paramedics in the age group of 20-40 years		Female paramedics in the age group of 20-40 years		Male paramedics in the age group above 40 years		Female paramedics in the age group above 40 years	
	Total score	% of the score to total weight	Total score	% of the score to total weight	Total score	% of the score to total weight	Total score	% of the score to total weight
Knowledge Management on the Performance of Health Care Services.								
KM system empowers paramedics, streamlines procedures, and helps in developing a sound organizational culture in health care services.	141	16.67	140	18.78	138	16.49	158	17.08
Clinical knowledge information in an effective manner improves the efficacy of health care services.	134	15.84	134	16	135	16.13	165	17.84
KM helps in providing information on curing patients, providing care, and health satisfaction.	140	16.55	146	17.42	145	17.32	150	16.22

Continue of Table 5:

KM reduces the inefficiency level in the health care services.	142	16.78	146	17.42	145	17.32	158	17.08
KM helps the paramedics to take the right decision at the right time and reduces errors and mistakes.	147	17.38	142	16.95	136	16.25	147	15.89
Updating knowledge management helps to enhance the quality of patient care and improve the performance of health care services.	142	16.78	130	13.43	138	16.49	147	15.89
Total weighted score	846		838		837		925	
Maximum Possible Score	1032		936		960		1080	
Least Possible Score	0		0		0		0	
% of total weighted score to maximum possible score	81.98		89.53		87.19		85.65	
Knowledge Management on Paramedics' Performance.								
KM helps the paramedics' performance to a great extent.	134	24.06	137	24.64	134	24.77	157	25.86
KM helps to improve the attitude of paramedics and contributes towards organizational goals in the health care services.	145	26.02	142	25.54	142	26.25	151	24.88
KM helps in paramedics' productivity.	139	24.96	135	24.28	133	24.58	148	24.38
KM helps paramedics to understand the designated task and clarity objectives.	139	24.96	142	25.54	132	24.40	151	24.88
Total weighted score	557		556		541		607	
Maximum Possible Score	688		624		640		720	
Least Possible Score	0		0		0		0	
% of total weighted score to maximum possible score	80.96		89.10		84.53		84.31	
Knowledge Management on Patients Care, Service, and Satisfaction.								
KM facilitates improving patients' care and services when they fail or are not perfect.	141	25.59	133	24.86	145	25.62	157	26.08
KM helps to take decisions on patients' care and service on time.	135	24.50	126	23.55	141	24.92	149	24.75
KM facilitates the development of skills of paramedics and leads to the better care and service quality to the given patients.	133	24.13	144	26.92	142	25.09	148	24.58
KM helps in providing accurate and patient specific service.	142	25.77	132	24.67	138	24.38	148	24.58
Total weighted score	551		535		566		602	

Continue of Table 5:

Maximum Possible Score	688		624		640		720	
Least Possible Score	0		0		0		0	
% of total weighted score to maximum possible score	80.09		85.74		88.44		83.61	
Regarding COVID-19 Attributes								
COVID 19 creates the new opportunity to learn technology-based application in the health care services.	140	20.03	136	19.83	146	20.53	154	19.76
Innovation in the field of medicines and vaccinations become important for health care industries to remain viable during the post-pandemic market environment.	130	18.60	134	19.53	144	20.25	151	19.38
The online learning module helped to establish a new way of communication among the paramedics.	140	20.03	135	19.71	140	19.69	153	19.64
Lack of training in an online mode often impacts on the effective service delivery to the ultimate patients.	138	19.74	132	19.24	137	19.28	155	19.89
New service demands and patients care in the wake of Omicron needs an effective training mechanism to equip the paramedics to meet the challenges.	151	21.60	149	21.69	144	20.25	166	21.33
Total weighted score	699		686		711		779	
Maximum Possible Score	860		780		800		900	
Least Possible Score	0		0		0		0	
% of total weighted score to maximum possible score	81.28		87.95		88.88		86.55	

Source: Annexure A, B, C, and D

Results and discussions

Regarding Knowledge Management on the Performance of Health Care Services

Within the group

For the male age group of 20-40 years, the attribute that KM helps the paramedics to take the right decision at the right time stands with the first preference, followed by the equal score for attributes like KM reducing the inefficiency in health care services and KM helping in enhancing the quality of patients care and improving the

performance of health care services, KM empowering paramedics for streamlining the procedures and developing a sound organizational culture in health care services. KM helps in providing information for curing and improving the efficacy of health care services. For the female in the same age group, the attributes like KM reducing the health care inefficiency and KM helping in providing information for curing, it stands with the equal score, followed by KM helping in taking the right decision at right time,

empowering paramedics, improving efficacy, and improving the quality of patient treatment.

For the male age group above 40 years, attributes like KM reduce the health care inefficiency and KM helps in providing information on curing patients, providing care, and health satisfaction that stand with an equal score followed by attributes like KM empowering paramedics, streamlining procedures, and KM improving the quality of patient care jointly stand the second position, followed by attributes of KM helping paramedics to make the right decision at right time and KM improving the efficacy of health care, as well. Similarly, in the case of female respondents of the same age group, KM improving the efficacy of health care services stands first that is followed by the equal score for KM empowering paramedics and KM reducing the inefficiency level in health care services, followed by KM providing information on curing which is followed by the equal score for attributes of KM helping paramedic to make the right decision at right time and KM helping in enhancing the quality of patient care.

Among the groups

Responding to the question related to the KM system empowers paramedics, streamlines procedures, and helps in developing a sound organizational culture in health care services, the same being highly opined by female paramedics in the age group of 20-40 years, followed by female paramedics in the age group of above 40 years, male paramedics in the age group of 20-40 years and male paramedics in the age group of above 40 years. Answering the question related to the Clinical knowledge information in an effective manner improves the efficacy of the health care services, the same being highly believed by female paramedics in the age group of above 40 years, followed by male paramedics in the age group of above 40 years, female paramedics in the age group of 20-40 years and male paramedics in the age group of 20-40 years. Joining to the question related to KM helps in providing information on curing patients and further providing care and health satisfaction, the same being highly opined by female paramedics in the age group of 20-40 years, followed by male

paramedics in the age group of above 40 years, male paramedics in the age group of 20-40 years and female paramedics in the age group of above 40 years.

Answering the question related to KM reduces the inefficiency level in the health care services, it was found that the female paramedics in the age group of 20-40 years had more support followed by male paramedics in the age group of above 40 years, female paramedics in the age group of above 40 years and male paramedics in the age group of 20-40 years. Responding to the question related to KM helps the paramedics to make the right decision at right time and reduces the errors and mistakes, the perception is high in the case of male paramedics in the age group of 20-40 years followed by female paramedics in the age group of 20-40 years, male paramedics in the age group of above 40 years and female paramedics in the age group of above 40 years. In the case of attributes related to updating knowledge management helps to enhance the quality of patient care and improves the performance of health care services the opinion by various groups led by male paramedics in the age group of 20-40 years followed by male paramedics in the age group of above 40 years, female paramedics in the age group of above 40 years and female paramedics in the age group of 20-40 years.

Regarding Knowledge Management on Paramedics' Performance

Within the group

For the female age group of 20-40 years, the attributes of KM helping in improving the attitude of paramedics and KM helping the paramedics to understand the designed tasks and clarity of objectives stand with the equal score, followed by KM helping in improving the performance of paramedics to a great extent and KM helping in improving the productivity of paramedics. The same for the male age group, the attribute of KM improving the attitude of the paramedics' stands first, followed by KM helping in the productivity of paramedics and KM helping paramedics in understanding the designed task and clarity of objectives with the equal score, followed by KM

helping the paramedics performance to a great extent.

For the male age group above 40 years, KM attribute in improving the attitudes of paramedics leads with priority, followed by KM helping the performance of paramedics to a great extent, KM helping in the productivity of paramedics and KM helping paramedics in understanding designed tasks. The female age group above 40 years gives priority to the attribute of KM helping the paramedics' performance to a great extent followed by the equal score for the attribute of KM improving the attitude of paramedics and KM helping the paramedics to understand designed tasks followed by KM helping in paramedics' productivity.

Among the group

Answering the question related to KM helps the paramedics' performance to a great extent, the opinions led by female paramedics in the age group of above 40 years followed by male paramedics in the age group of above 40 years, female paramedics in the age group of 20-40 years, and male paramedics in the age group of 20-40 years. Joining to the question, KM helps to improve the attitude of paramedics and contributes towards organizational goals in the health care services, the opinions led by male paramedics in the age group of above 40 years and it is followed by male paramedics in the age group of 20-40 years, female paramedics in the age group of 20-40 years, and female paramedics in the age group of above 40 years. Responding to the question related to KM helps in paramedics' productivity, the opinions led by male paramedics in the age group of 20-40 years, male paramedics in the age group of above 40 years, female paramedics in the age group of above 40 years, and female paramedics in the age group of 20-40 years. Joining the question related to KM helps paramedics to understand the designated task and clarity of objectives, the groups were led by female paramedics in the age group of 20-40 years and followed by male paramedics in the age group of 20-40 years, female paramedics in the age group of above 40 years, and male paramedics in the age group of above 40 years.

Regarding Knowledge Management on Patients' Care, Service, and Satisfaction

Within the group

In the case of the male age group of 20-40 years, the attribute of KM helping in providing the accurate and patient-specific services stands first followed by the attribute that KM facilitates in improving the patient care and services when they fail or are not perfect, KM helps in deciding on time and KM facilitates in developing skills of paramedics and leads to better care and service quality to the given patients, as well. Moreover, for the male age group above 40 years, the attribute that KM facilitates in improving the patient care and services when they fail or are not perfect stands first followed by the attribute that KM facilitates in developing skills of paramedics and leads to better care and service quality to the given patients, KM helps to make decisions on patients care and service on time and KM helps in providing accurate and patient-specific service.

For the female age group of 20-40 years, the attribute that KM facilitates in developing skills of paramedics and leads to the better care and service quality to the given patients stands first preference followed by the attribute that KM facilitates in improving patient care and services when they fail or are not perfect, KM helps in providing accurate and patient-specific service and helps to make decisions on patients care and service on time. In the case of the female respondent's age group of above 40 years, the attribute that KM facilitates in improving patient's care and services when they fail or are not perfect stands first followed by the attribute that KM helps to take decisions on patient care and service on time and followed by equal weight for the attribute that KM facilitates in developing skills of paramedics and leads to better care and service quality to the given patients and KM helps in providing accurate and patient-specific service.

Among the groups

Joining to the question related to KM facilitates in improving patient's care and services when they fail or are not perfect, the groups led by female paramedics in the age group above 40 years and followed by male paramedics in the age group

above 40 years, male paramedics in the age group of 20-40 years and female paramedics in the age group of 20-40 years. Responding to the question related to KM helps to make decisions on patient care and service on time, the opinions led by male paramedics in the age group of above 40 years, followed by female paramedics in the age group of above 40 years, male paramedics in the age group of 20-40 years and female paramedics in the age group of 20-40 years. Answering the question related to KM helps in providing information on curing patients, providing care, and health satisfaction, the opinions led by female paramedics in the age group of 20-40 years and followed by male paramedics in the age group of above 40 years, male paramedics in the age group of 20-40 years, and female paramedics in the age group of above 40 years. Participating in the question related to KM helps in providing accurate and patient-specific service, the perception percentage led by male paramedics in the age group of 20-40 years and followed by female paramedics in the age group of 20-40 years, female paramedics in the age group of above 40 years, and male paramedics in the age group of above 40 years.

Regarding COVID-19 attributes

Within the group

Responding to the question, new service demands and patients care in the wake of Omicron need an effective training mechanism to equip the paramedics to meet the challenges stood first preference by both male and female age group of 20-40 years, female members above 40 years further chose it as their first preference, but it was a second preference by the male age group of 40 years. Responding to the query related to COVID-19, creating new opportunity to learn technology-based applications in the health care services, male and female age group of 20-40 years put it as the second preference; it was the first preference by the male age group of 40 years and the third one by female age group of 40 years. Answering the query related to innovation in the field of medicines and vaccinations becomes important for health care industries to remain viable during a post-pandemic market environment, it was observed as the second

preference by the male age group above 40 years, the 5th preference by the female category of more than 40 years, the fourth one by male and female age group of 20-40 years.

The online learning module helped to establish a new way of communication among the paramedics was a second preference by the male age group of 20-40 years and the 3rd preference by the female age group of 20-40 and the male age group of above 40 years. The same was the 4th preference by the female age group above 40 years. Lack of training in an online mode often impacts on the effective service delivery to the ultimate patients was the 2nd, 3rd, 4th, and 5th preferences by the female age group above 40 years, male age group of 20-40 years, male age group of 40 years, and female age group of 20-40 years, respectively.

Among the group

Answering the question related to COVID-19 creates a new opportunity to learn technology-based applications in the health care services, the perception among the groups led by male paramedics in the age group of above 40 years, male paramedics in the age group of 20-40 years, female paramedics in the age group of 20-40 years, and female paramedics in the age group of above 40 years. Joining the question for innovation in the field of medicines and vaccinations become important for health care industries to remain viable during post-pandemic market environment, the survey opinions led by male paramedics in the age group of above 40 years, female paramedics in the age group of 20-40 years, female paramedics in the age group of above 40 years, and male paramedics in the age group of 20-40 years. Responding to the question related to online learning module helped to establish a new way of communication among the paramedics, the opinions led by the groups were male paramedics in the age group of 20-40 years and followed by female paramedics in the age group of 20-40 years, male paramedics in the age group of above 40 years, and female paramedics in the age group of above 40 years.

Participating in the survey question related to the lack of training in an online mode often impacts on the effective service delivery to the target

patients the opinions led by the female paramedics in the age group of above 40 years, male paramedics in the age group of 20-40 years, male paramedics in the age group of above 40 years, and female paramedics in the age group of 20-40 years. Finally responding to the question related to new service demands and patients care in the wake of Omicron needs an effective training mechanism to equip the paramedics to meet the challenges of perceptions led by female paramedics in the age group of 20-40 years, male paramedics in the age group of 20-40 years, female paramedics in the age group of above 40 years, and male paramedics in the age group of above 40 years.

Suggestions

Various knowledge management initiatives would facilitate combating the harmful effect of the COVID-19 pandemic among healthcare experts, the common public, and corporate. The government needs to involve doctors, experts, and business leaders in transforming the healthcare sector. An effective knowledge management system entails high-class connectivity, an educative online platform, community welfare, and an environment of trust among the different sections of society such as healthcare, organizations, and government. The proper coordination among various institutes like IITs, IIMs and NGOs, and the other agencies like panchayats, and local administration is very crucial in facing with challenges and improving governmental response to protect the public health system. The innovative and fresh solutions to the public health emergency can be achieved by adopting an appropriate digital health system. Health care systems would be well equipped to ensure proper patients care and safety of health workers if they make timely investments in telemedicine, etc. Health infrastructure in India should be strengthened by focusing on long-term health priorities. Hospitals in India should be so developed that every ward in the hospital can be in a position to respond swiftly to any national health emergency. The technology-enabled platforms serve as an alternate distribution channel for providing delivery of the last-mile health care services. These technology-enabled

platforms with related digitization processes facilitate the utilization of telemedicine in mental health and primary care. The National Health Mission (NHM) plays a crucial role in increasing the access of poor people to pre-natal and post-natal care and improving the institutional delivery system. Therefore, in the Ayushman Bharat scheme, NHM should be accorded a significant place. Government should invest in internet connectivity and health infrastructure.

Conclusion

The era of the pandemic in this 21st century is quite a difficult period in the life of mankind. This not only derailed the lives of common people, but also affected the health care sectors. This was because of the unexpected and uncertain phase of mankind for which we were not prepared.

In health care organizations, KM can be considered as the core competence to meet challenges. The proposed paper discussed knowledge management and its role in transforming the health care sector during the on-going pandemic in India. KM can no longer be regarded as a standalone phenomenon rather it carries the strategic importance in health care organizations. KM and the related technologies will strengthen the delivery of services, and enhance the value generation leading to the overall transformation of the health care sector.

In the present study, an attempt has been made to explore how and to what extent knowledge management contributed to the optimal situation of the health care sector during the crisis period. In this direction, various attributes are categorized into four segments. The analysis has been carried out based on the performance of health care, the basis of paramedics' performance, relied on patient care, service, and satisfaction as well as COVID-related attributes. On the whole, the percentage of the actual score to the maximum possible score is found to be more than 80%. This indicates that various sub-variables identified for the present research are precisely relevant and knowledge management plays an important role in the health care sector for better discharge or performance of the desired segments.

Various knowledge management initiatives such as knowledge dissemination among health workers, KM strategies to solve child protection issues, collaboration with ministries, knowledge communication with local groups, creating awareness of knowledge management base among corporate, and sustaining knowledge management among the public should be adopted systematically which would go a long way in transforming health care sector in India.

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All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

Conflict of Interest

We have no conflict of interest to disclose.

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References

[1]. El Morr C., Subercaze J., *Knowledge management in healthcare*. In *Handbook of research on developments in e-health and telemedicine: technological and social perspectives* (pp. 490-510). IGI Global. 2010 [Crossref], [Google Scholar], [Publisher]

[2]. Zou L., Ruan F., Huang M., Liang L., Huang H., Hong Z., Yu J., Kang M., Song Y., Xia J., Guo Q., Song T., He J., Yen H.L., Peiris M., Wu J., *N. Engl. J. Med.*, 2020, **382**:1177 [Crossref], [Google scholar], [Publisher]

[3]. Grant R.M., *Calif. Manag. Rev.*, 1991, **33**:114 [Crossref], [Google scholar], [Publisher]

[4]. Orzano A.J., McInerney C.R., McDaniel R.R., Meese A., Alajmi B., Mohr S., Tallia A.F., *Health Care Manag. Rev.*, 2009, **34**:224 [Crossref], [Google scholar], [Publisher]

[5]. Suurla R., Markkula M., Mustajärvi O., *Committee for the Future*. 2002 [Google scholar]

[6]. Dalkir K., *Knowledge Management in Theory and Practice*, London, UK: Butterworth-Heinemann Publisher, 2005 [Google scholar]

[7]. Grant R.M., *Strateg. Manag. J.*, 1996, **17**:109 [Crossref], [Google scholar], [Publisher]

[8]. Von Krogh G., *Calif. Manag. Rev.*, 1998, **40**:133 [Crossref], [Google scholar], [Publisher]

[9]. Alavi M., Leidner D., *MIS Quarterly*, 2001, **25**:107 [Crossref], [Google scholar], [Publisher]

[10]. Kaur S., Gupta S., Singh S.K., Perano M., *Technol. Forecast. Soc. Change*, 2019, **145**:43 [Crossref], [Google scholar], [Publisher]

[11]. Laihonon H., Huhtamaki J., *Knowl. Manag. Res. Pract.*, 2020, **1** [Crossref], [Google scholar], [Publisher]

[12]. Ikonen A.K., *Knowl. Manag. Res. Pract.*, 2020, **18**:69 [Crossref], [Google scholar], [Publisher]

[13]. Tamanna, Sharma S.K., *Int. J. Emerg. Technol.*, 2019, **10**:416 [Publisher]

[14]. Panahi S., Watson J., Partridge H., *J. Knowl. Manag.*, 2016, **20**:344 [Crossref], [Google scholar], [Publisher]

[15]. Najmi K., Kadir A.R., Kadir I.A., *Int. J. Law Manag.*, 2017, **60**:517 [Crossref], [Google scholar], [Publisher]

[16]. Simonen O., Blom M., Viitanen E., *Int. J. Product. Perform. Manag.*, 2011, **60**:797 [Crossref], [Google scholar], [Publisher]

[17]. Sibbald S.L., Wathen C.N., Kothari A., *Health Care Manag. Rev.*, 2016, **41**:64 [Google scholar], [Publisher]

[18]. Ganguly A., Talukdar A., Chatterjee D., *Knowl. Process. Manag.*, 2020, **27**:25 [Crossref], [Google scholar], [Publisher]

[19]. Parast M., Golmohammadi D., *Int. J. Prod. Econ.*, 2019, **216**:133 [Crossref], [Google scholar], [Publisher]

- [20]. Massingham P., Massingham R., Pomeroy A., *Int. J. Knowl. Manag.*, 2018, **14**:69 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [21]. Karamat J., Shurong T., Ahmad N., Waheed A., Khan S., *Sustainability*, 2018, **10**:4155 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [22]. Karimi M., Gholami-Ahangaran M., *Plant Biotechnol. Persa.*, 2021, **3**:34 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [23]. Kim Y.M., Newby-Bennett D., Song H.J., *J. Knowl. Manag.*, 2012, **16**:480 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [24]. Chen Y.H., Liu C.F., Hwang H.G., *Expert Syst. Appl.*, 2011, **38**:450 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [25]. El Morr C., Subercaze J., *Handbook of research on developments in e-health and telemedicine: technological and social perspectives*, IGI Global, 2010, 490 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [26]. Karamat J., Shurong T., Ahmad N., Waheed A., Mahmood K., *Int. J. Environ. Res. Public Health*, 2018, **15**:2816 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [27]. Assem P.B., Pabbi K.A., *VINE J. Inf. Knowl. Manag. Syst.*, 2016, **46**:479 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [28]. Sabeeh Z.A., Mustapha S.S., Mohamad R., IGI, 2016 [[Google scholar](#)], [[Publisher](#)]
- [29]. Mitchell P., Wynia M., Golden R., McNellis B., Okun S., Webb C.E., Von Kohorn I., *NAM Perspect.*, 2012 [[Google scholar](#)], [[Publisher](#)]
- [30]. Eisenberg J.M., Bowman C.C., Foster N.E., *Jt. Comm. J. Qual. Improv.*, 2001, **27**:444 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [31]. Meri M., *Bus. Excell. Manag.*, 2020, **10**:5 [[Google scholar](#)], [[Publisher](#)]
- [32]. Nagelkerk J., *Leadership and nursing care management*. Elsevier Health Sciences. 2005 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [33]. Browning H.W., Torain D.J., Patterson T.E., *Center for Creative Leadership White Papers*, 2011 [[Google scholar](#)], [[Publisher](#)]
- [34]. Mayer C.H., Boness C., *Asia Pacific J. Bus. Manag.*, 2010, **1**:31 [[Google scholar](#)], [[Publisher](#)]
- [35]. Guest D., *Indu. Relat. J.*, 2002, **44**:335 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [36]. Alghamdi S., Asif M., *Int. J. Adv. Biol. Biomed. Res.*, 2022, **10**:18 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [37]. Rahmattullah N., Arumingtyas E., Widyananda M., Ahyar A., Tabroni I., *Int. J. Adv. Biol. Biomed. Res.*, 2021, **9**:298 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [38]. Sahni H.S., *Int. J. Acad. Med.*, 2020, **6**:70 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [39]. Stawicki S.P., Firstenberg M.S., Papadimos T.J., *Global Health Security. Springer International Publishing*, 2020, 341-357 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]
- [40]. Bhagavathula A.S., Aldhaleei W.A., Rahmani J., Mahabadi M.A., Bandari D.K., *JMIR Public Heal Surveill*, 2020, **6**:e19160 [[Crossref](#)], [[Google scholar](#)], [[Publisher](#)]

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