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ORIGINAL ARTICLE

Patient Safety is the Need of the Hour: A Study in Nursing Department of a Tertiary Care Teaching Hospital

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ABSTRACT

Introduction: Patient safety is an important aspect of health care and is an issue of high concern globally. It was aimed to study the patient safety behavior among the nursing personnel of a tertiary care teaching hospital of North India.

Materials and methods: A descriptive, cross-sectional study was conducted over a period of 6 months in a tertiary care teaching hospital of North India. Study population included the 200 nursing officers, both clinical and administrative (very few). The data were collected using structured questionnaire using Hospital Patient Safety Survey Questionnaire of Agency for Health Research and Quality, USA. The questions were predominantly close-ended with very few open-ended questions and used five-item Likert scale. It had approximately 45 items on various aspects of patient safety, viz., teamwork across hospital units, patient safety during handoffs and transition of care, staff perception about patient safety, reporting of adverse events, etc. Overall patient safety grade for hospital was taken as outcome variable. The questionnaires were distributed in sealed envelopes in the work areas of the study population and collected after a period of 2 weeks.

Results: The questionnaire yielded a response rate of only 66.5%. There was no patient safety committee in the hospital; however, two-thirds (63.9%) of respondents believed that the hospital provides a work environment that promotes patient safety. Almost half (54.83%) of the respondents agreed that their supervisor/managers' actions/behavior promotes patient safety. Nursing department promotes continuous learning that was agreed by 82.6%. Majority (72.5%) of the nursing staff are afraid to ask questions or speak up if they see something that negatively affects patient care. Only 66% staff agreed that they communicate and discuss errors/adverse events. Most (80.4%) of the staff believe that punitive action would be taken against them if they commit any error. Majority (90%) of the staff believe that they do not have enough staff to handle workload. Two-thirds of the nursing staff think that actions of hospital management promote patient safety. Only 59.2% of staff agreed that there is good cooperation/teamwork across different hospital departments. Almost half of the nursing staff believe that patient safety is compromised during hospital handoffs and transition. Only 26% of the nursing staff rated overall hospital safety as very good and above. Only 9.1% reported any errors/adverse events happening in the unit. By analyzing the data, prevalence of patient safety behavior in the nursing department is found to be 52.6%.

Conclusion: Structured system for implementation of patient safety measures is missing and hospital has to work a lot when it comes to delivering the patient care services in a safe environment.

Keywords: Nursing department, Patient safety, Safe care.

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INTRODUCTION

Patient safety is defined as "the prevention of harm to patients." Emphasis is placed on the system of care delivery that prevents errors; learns from the errors that do occur; and is built on a culture of safety that involves health care professionals, organizations, and patients. Patient safety practices have been defined as "those that reduce the risk of adverse events related to exposure to medical care across a range of diagnoses or conditions".[1] Patient safety is an important aspect of health care and is an issue of high concern globally, since the magnitude of the harm done to patients by preventable errors is alarming. It is essential for every health care institution, and hence, instilling patient safety culture among all staff involved in health care delivery is of vital importance.[2] Patient safety climate of health care organizations can be effectively assessed using validated questionnaires like safety attitude questionnaire, and capturing respondent variations in different dimensions of safety culture brings out focus areas for sustained quality improvement efforts.[3]

Nursing has clearly been concerned with defining and measuring quality long before the current emphasis on quality improvement. Florence Nightingale analyzed mortality data among British troops in 1855 and accomplished significant reduction in mortality through organizational and hygienic practices.[4] These were the earliest measures

taken which can be related to quality and patient safety. As the primary caregivers in hospitals, nurses are best positioned to improve quality and patient safety. Nurses spend 20 to 30% of their time in direct patient care. The nurse/patient relationship is a pivotal component of any patient safety culture.[5-7] Hence, this study was conducted to observe the patient safety behavior among the nursing professionals of a tertiary care hospital, which would help to deliver quality care in safe environment.

MATERIALS AND METHODS

A descriptive and cross-sectional study was conducted among the nursing professionals of a tertiary care government hospital of North India from May 2010 to December 2010. Study population included nursing professional involved both in patient care services and those having administrative responsibilities. The data were collected using structured questionnaire using Hospital Patient Safety Survey Questionnaire of Agency for Health Research and Quality, USA.[8] The questions were predominantly close-ended with very few open-ended questions and used five-item Likert scale. It included both positively and negatively worded questions to remove any kind of bias. It had 45 items on various aspects of patient safety, viz., teamwork across hospital units, patient safety during handoffs and transition of care, staff perception about patient safety, reporting of adverse events, etc. Overall patient safety grade for hospital was taken as outcome variable. The questionnaires were distributed to respondents in sealed envelopes (to maintain confidentiality) in the respective work area of the respondents and collected after 1 week. No reminder was given to nonrespondents. Patient safety strengths were defined as those positively worded items that about 75% of respondents endorsed by answering "Strongly agree/Agree" or "Always/Most of the times" (or those negatively worded items that 75% of respondents disagreed with). Similarly, areas needing improvement are identified as those items that respondents did not answer positively (they either answered negatively or "Neither" to positively worded items or agreed with negatively worded item). Basic statistical measures were calculated.

RESULTS

This study was conducted in a tertiary care government teaching hospital having more than 500 beds and located in the northern part of the country. It has got round the clock emergency services in all the major specialties, daily outpatient department (OPD) of approximately 1,300 to 1,500 patients, state-of-the-art 22 fully equipped operation theaters with latest technology equipment, 27 critical care beds, and 52 private rooms for the patients.

Study population included nursing staff from OPD, inpatient department (IPD), emergency department, operation theater, intensive care unit, cardiac care unit, neonatal intensive care unit, labor room, and other support services departments. Study involved nursing staff from all the shifts. Of the 200 nursing staff to whom the questionnaires were given, only 133 responded, yielding a response rate of 66.5%. Out of the total 133 respondents, there were 85.7% (114) females and rest 14.3% (19) were males. Study population included 117 (88%) staff nurses, 13 nursing sister, 2 assistant nursing superintendent, and nursing superintendent. Almost half (54.88%) of the respondents were from IPD, followed by operation theater 21.05% (28), critical care areas 15.03% (20), OPD 6.01% (8), and only 3% (4) from the administrative cadre.

Median age group of respondents was 30 to 40 years, which comprised 58% (77) of the study population followed by 21 to 30 years (38.3%), 41 to 50 years (2.3%), and 51 to 60 years (1.5%). Nursing staff having more than 10 years of experience constituted 51.1% of all the respondents. Only 28.6% of nursing staff possessed experience <6 years.

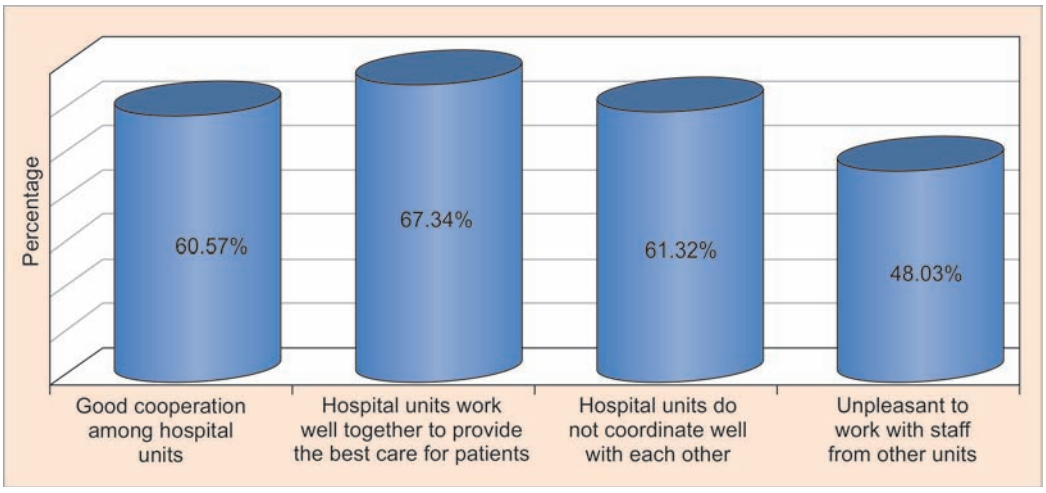
There is no patient safety committee in the hospital but there are other committees like hospital infection control committee, antibiotic committee, drugs committee, etc., which deliberate and address the important components of the patient safety. Also, medical superintendent round is convened on every first and third Thursday of the month to review the hospital situation. The responses of the questionnaire have been depicted in Graphs 1 to 6, which are self-explanatory.

Analyzing the data by composite frequency matrix, prevalence of patient safety behavior in the nursing department was found to be 52.6%.

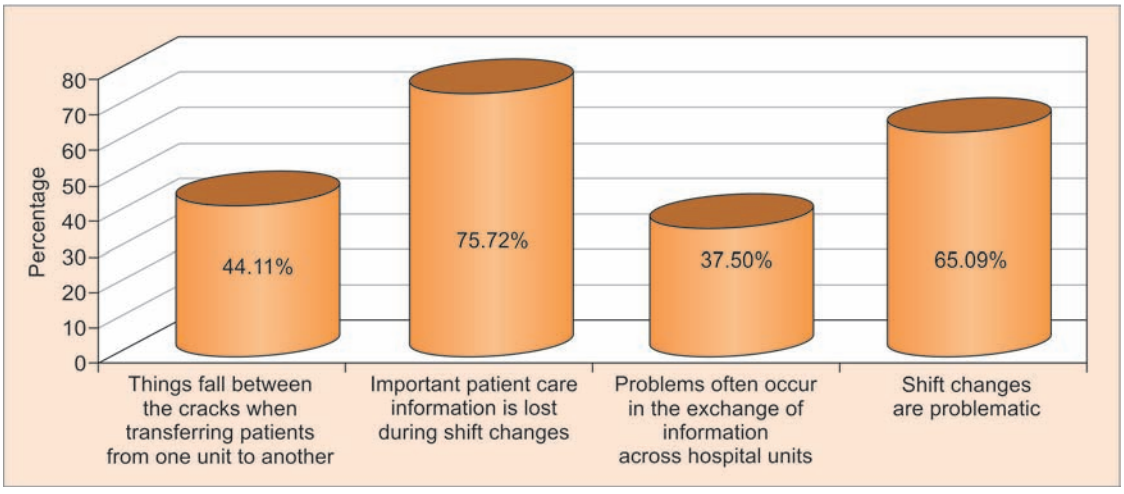
DISCUSSION

The present study is an attempt to understand the patient safety behavior among the nursing staff; however, it would have been much more meaningful had it included other categories of health care workers, e.g., doctors, paramedics, group D staff, etc., to capture holistic picture of the patient safety behavior of the hospital/teaching institute. Staff nurses delivering patient care services formed a large proportion of our study population and this was beneficial for our study as they are directly involved with patient care. No attempt was made to understand the concepts held by the different study participants with regard to patient safety and their responses were analyzed as it is without making any changes/modifications.

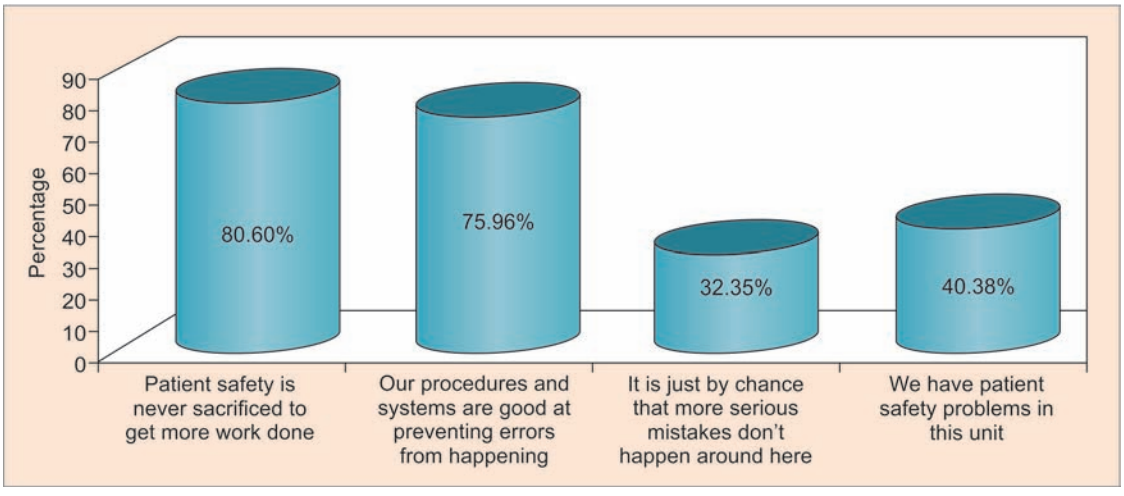
In this study, the prevalence of patient safety behavior among the nursing professionals was found to be 52.6%. In a study conducted in a teaching hospital of India,



Graph 1: Teamwork across hospital units



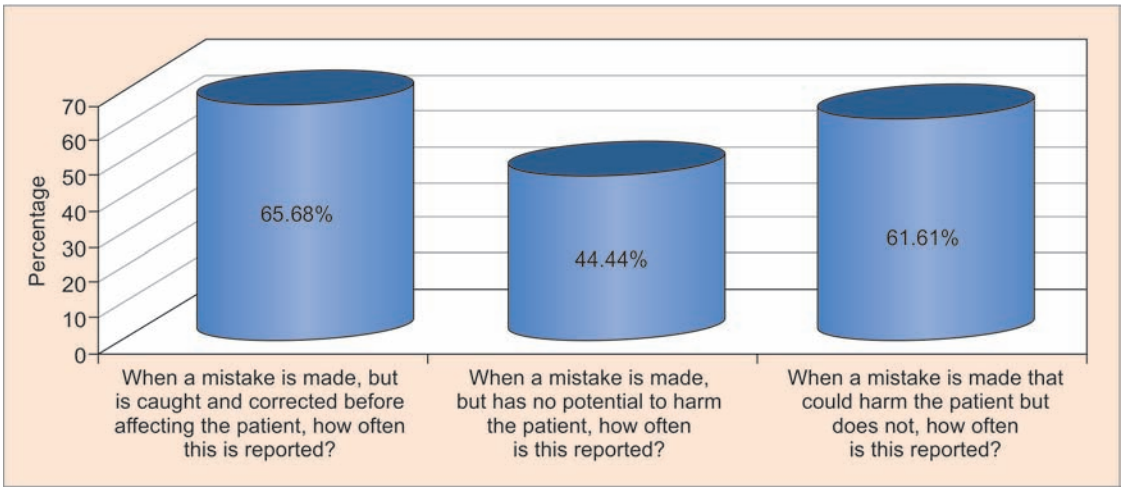
Graph 2: Patient safety during hospital handoffs and tradition



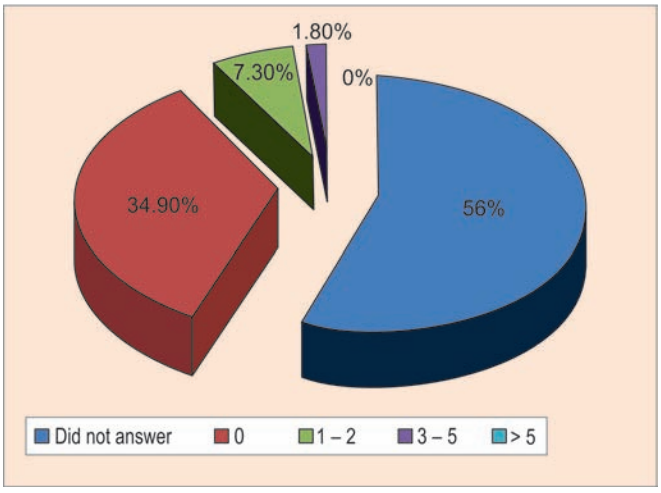
Graph 3: Overall perception of patient safety

average patient safety culture among the survey category of the hospital staff, across all items of dimensions and levels of culture, was measured to be 48%.[2] Hence, our findings were better than the earlier conducted study in India. It is also relevant to mention that there have been very few studies conducted on the subject, either at national level or at the hospital level.

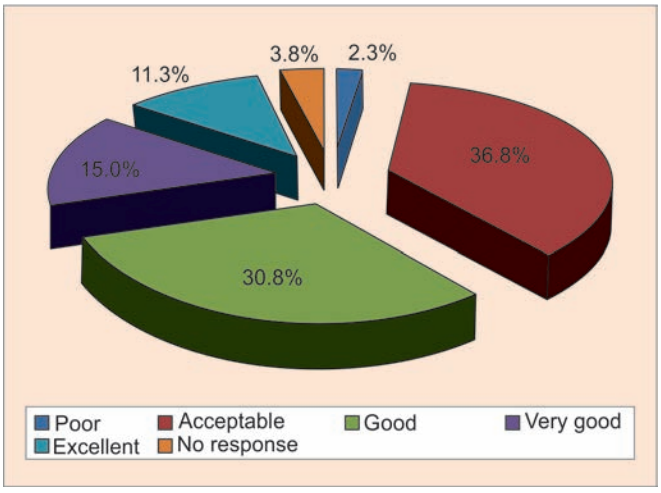
The study setting is a public health care facility where achieving quality standards in patient safety is perceived to be much more difficult than private sector hospitals,



Graph 4: Frequency of event reporting



Graph 5: Number of events reported



Graph 6: Overall patient safety grade to hospital

but still according to the study, 26% of the respondents rated the patient safety as very good and above. In a study conducted among the nursing staff in a tertiary care hospital in Puducherry having comparable sample size and health care setting, only 12.7% of the nurses reported excellent level of safety culture in their units, whereas majority reported only acceptable level of safety culture, i.e., 31.9%.[9] The findings of this study are comparable with similar studies conducted and are evidence to the fact that provisioning of patient care services in a safe environment needs massive improvement. There is a dire need to conduct similar kind of studies on a much larger scale involving multiple institutions, which helps us understand patient safety in the Indian context as there have been very few studies in this area.

Although inadequate resources are likely to be a substantial challenge to the improvement of patient safety in India, other patient safety barriers, such as health systems changes, training, and education could be addressed with fewer resources. While initial approaches to improving patient safety in India and other low- and middle-income countries have focused on implementing processes that represent best practices, this study suggests that multifaceted interventions that also address more structural problems (such as resource constraints, systems issues, and medical culture) may be important.[10]

CONCLUSION

The study findings reflect a very grim picture of the patient safety culture among the nursing professionals, which may be considered as a surrogate indicator for the entire hospital. The patient safety measures seem to be missing right from top to bottom, which is evident with the fact that there is no patient safety committee/patient safety program within the institution. The patient's safety needs to be implemented in order to provide patient care services in a safe environment.

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ORIGINAL ARTICLE

An Exploratory Study on the Benefits of Quality Accreditation: Financial Impact and Chief Executive Officer Perspectives

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ABSTRACT

Little systematic evidence exists in published literature about the net financial impact of the process of quality accreditation on hospitals that have undergone the process. This exploratory study aims to explore the financial impact of undergoing National Accreditation Board for Hospitals & Health Care Providers (NABH) accreditation in Indian hospitals, based on chief executive officers (CEOs') perspectives and the financial outcomes perceived by them. The attempt has been to provide a qualitative assessment of the costs and benefits of NABH accreditation on the financial health of the organization. As there were no leading studies to reference that could emulate the data available in the Indian context, the study team developed a set of financial indicators that could be collected from NABH-accredited hospitals. A total of 14 hospitals in Delhi, Ahmedabad, Mumbai, Bengaluru, Mysuru, Surat, and Chennai were included in the study. The CEOs of participating hospitals perceived that the NABH accreditation has been beneficial to their organization and that the overall quality of care for patients within their organizations has improved. In addition, they also confirmed improved awareness of statutory compliances, and of staff responses to emergencies, such as fire and cardiopulmonary resuscitation, and that data and evidence-based decision-making have helped in managing the facility better. The study suggests that the delivery of health care was positively influenced by NABH accreditation. The exploratory study also highlights the factors that may contribute to positive financial outcomes for hospitals. Specifically in terms of financial outcomes, the study has found that the income per used bed shows an increasing trend after the accreditation period. This may suggest medium- to long-term financial benefits to hospitals undergoing NABH accreditation.

Keywords: Chief executive officer perspective, Economic impact, Financial impact, Financial outcomes, Health care in India, National Accreditation Board for Hospitals & Health Care Providers accreditation.

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INTRODUCTION

The health care sector in India is fairly heterogeneous in itself, and also caters to large and varied segments of society. A wide range of health care providers exist in the mixed public and private health system of the country. The public health system is characterized by a tiered structure ranging from primary health centers to tertiary hospitals. Likewise, the private health sector consists of a broad spectrum ranging from informal individual providers to highly renowned and often globally recognized health care institutions, and includes nongovernment organization-operated health care services as well as for-profit hospitals owned by individuals, partnerships, and corporate entities.

Despite years of strong economic growth and increased health spending by the government in the 11th 5-Year Plan period, the total spending on health care in 2013 to 2014 in the country was about 4.02% of gross domestic product (GDP).[1] The government spending on health care in India is only 1.15% of GDP. This is 3.8% of total government expenditure and accounts for 28.6% of total health spending. This translates in absolute terms to INR 1,042 per capita at current market prices.[2] Global evidence on health spending shows that, unless a country spends at least 5 to 6% of its GDP on health with government expenditure being a major part, basic health care needs are seldom met.[3]

The overall Union Health Budget proposed in 2017 has increased from INR 39,879 crore (1.97% of total Union Budget) to INR 48,878 crore (2.27% of total Union Budget). This is in line with the plan to increase health expenditure by the government as a percentage of GDP to 2.5% by

2025.[2] At the same time, the out-of-pocket share incurred by households remains high, creating a vulnerability to catastrophic expenditure on health that impoverishes millions of Indians each year.

The hospital market in India can be broadly classified into government-aided and government-run hospitals, private hospitals (including trust and charitable hospitals, as well as small hospitals owned by individuals and partners), corporate hospitals, and private/public partnership hospitals.[4] There are a number of drivers for continued growth of the hospital market in India, including the increase in noncommunicable and lifestyle diseases that often require hospitalization, more government initiatives purchasing services from hospitals on behalf of the poor and other vulnerable groups, and the growing health insurance market that removes financial barriers to access. This has also been associated challenges, such as a possible mismatch or shortage of hospital beds vis-à-vis the need thereof, shortage of health care professionals including paramedical personnel, and possible loss of focus on quality of health care services. One key trend that has emerged is the rise of multispecialty hospitals and specialty clinics. There are also diversified business approaches being tried, such as hospital chains and alliances, strategic expansion by providers based in metropolitan cities into tier II and tier III cities, and asset-light and capital-intensive business models.[5]

Private providers are playing a significant role in the growth of the Indian health care sector, accounting for 65% of the primary care facilities and 40% of hospitals in the country as per 2011 data.[6] Over the last two decades, corporate hospital chains have also emerged and grown rapidly, often focusing on the top-end of the market. Some key corporate chains in India include Apollo Hospitals, Fortis Healthcare, Manipal Health Enterprises, Narayana Health, Max Healthcare, and Columbia Asia hospitals. As citizen expectations grow, economic growth continues and the affordability of health care improves with insurance mechanisms being available. There is a strong need to improve the quality of care provided across the heterogeneous mix of public and private hospitals in the country.

The NABH is a constituent board of the Quality Council of India, set up to establish and operate accreditation and allied programs for health care organizations. To attract a larger number of hospitals in a staged approach to investing in the quality of health care, NABH has recently introduced a multilevel accreditation process (http://nabh.co/Hospital-EntryLevel.aspx; accessed on March 29, 2016) starting with a Pre-Accreditation Entry-Level Certification followed by a Progressive-Level Certification and finally the Complete Accreditation status. This helps hospitals commence their journey toward full accreditation in easier, incremental steps, also enabling a wider base of hospitals to improve their quality of services.

The fact that the government is providing incentives in their schemes for hospitals that are accredited by NABH is viewed as a positive step toward better quality patient care, both by patients and CEOs. In a bid to reward hospitals for investing in the quality of services they provide, NABH accreditation has been made a criterion for empanelment or for certain incentives under government-sponsored health insurance programs, such as the Central Government Health Scheme and the state government health insurance programs for the poor and informal sector in the states of Andhra Pradesh, Karnataka, Gujarat, and Meghalaya.[7] The Insurance Regulatory and Development Authority (IRDA) of India issued a circular in July 2016[8] which mandates that all 33,000 IRDA-empaneled hospitals must have entry-level NABH certification as part of the minimum criteria in order to continue as an empaneled hospital.

The accreditation of hospitals based on NABH standards has been acknowledged as an important tool in improving the quality of health care in the country. While this is being recognized by various sectoral stakeholders, there has also been a demand to understand the financial implications of accreditation, with the understanding that it will be a further incentive to hospitals if the experience so far suggests positive financial outcomes. The authors believe that such a study of the financial implications of NABH accreditation has not been attempted before. The objective of this study, therefore, was to explore financial and structural indicators of hospitals and find evidence for changes in financial outcomes during and after accreditation. This would help substantiate the belief that accreditation will have a positive impact on both the quality of health care and the economics of a hospital. While studies have been done in other contexts on the impact of accreditation on the quality of health care, the financial outcomes need to be studied more extensively. This study, therefore, constitutes an initial step, wherein the authors explored CEO perspectives of the financial implications of investing in NABH accreditation of their hospital. A more extensive confirmatory study continues to be on the future agenda for research.

RESEARCH METHODOLOGY

The authors surmise that this study is among the first of its kind in exploring the financial implications of investing in hospital accreditation, based on CEO perspectives and data on financial outcomes. As there were no leading studies to reference, the study team developed a

set of financial indicators, reporting on which was then requested from NABH-accredited hospitals. The extended study team supporting the authors comprised NABH assessors and other health care quality experts who had a deep understanding of the operational and financial aspects of a functioning hospital. The NABH-accredited hospitals that agreed to participate in the study are from all the major centers where NABH-accredited hospitals are located in the country. Each hospital was visited by an assessor who had participated in the NABH accreditation process as an assessor, or a hospital representative, or both. The predetermined questionnaire was sent to them before the visit so that the hospitals could keep the data ready to be discussed and clarified by the study team representative. The collected data were collated and analyzed for studying the financial impact. This research study was carried out between January 2016 and March 2016. Costs for the study and data collection were supported by the World Bank as part of their support to the Quality and Accreditation Collaborative, a working group of sub-national and national policymakers.

Sampling

Convenience sampling was used for this exploratory study. The primary criterion for selecting the hospital for the study was that the hospital should have received full NABH accreditation status at least 3 years prior to the study, i.e., before January 2013, to allow adequate time for the hospitals to perceive any changes in their finances. To keep the information relatively homogenous, all hospitals studied are private, multispecialty institutions, as they comprised the bulk of NABH-accredited hospitals on the cut-off date. The team estimated that a convenience sample of 15 hospitals, of varying bed sizes and in varied locations, would provide the diversity of information needed for this study. Hospitals in Delhi, Ahmedabad, Mumbai, Bengaluru, Mysuru, Surat, and Chennai were accordingly included in the final study sample. All the 15 selected hospitals were approached by the study group and a total of 14 hospitals shared data. The final sample included five hospitals with less than 100 beds, five hospitals with 100 to 300 beds, and four hospitals with more than 300 beds. The hospitals included for-profit/corporate entities, not-for-profit trust/society-owned organizations, and missionary/faith-based health care institutions.

As some of the data requested was considered confidential by the hospitals, the data were not always provided in the suggested assessable format. This gave us a total of eight hospitals that could be included in a multivariate analysis ranging in time from 2 years before the accreditation to 5 years after the accreditation. The sample set of data included 52 samples across the time period of the study with most data being available for 1 year before the event of accreditation and until 2 years after the event.

The questionnaire used to collect data was finalized after a pretest undertaken at one of the participating hospitals. The data collection involved both telephonic follow-up as well as site visits to hospitals. The data included nonfinancial as well as financial indicators.

The financial data included overall income and expense statistics, and specific expenditure incurred in pursuit of NABH accreditation, which in turn included one-time as well as recurring expenses. Due to the perceived sensitive nature of the data, the hospitals were given the option of sharing the data as either the absolute number or as a percentage of total revenues for several parameters. Some participating hospitals gave only the percentages which could not be used for the statistical analysis conducted as part of this study.

The CEOs of the hospitals also answered a nine-question perception survey on a five-point Likert scale to indicate their impressions on the effects of NABH accreditation on their hospitals. The data are presented in Appendix 1.

Data Management Procedure

The data were collected through physical forms that were typed or handwritten. All the data requested were not provided by all the hospitals. Some gave aggregated data for some parameters, while others gave data in percentages. The variation in data form had to be taken into account while collating the data into a common format for analysis. This necessitated the elimination of data from four hospitals as they were either incomplete or in formats which could not be converted into the required format. Further, one more hospital's data were rendered unusable as the pre-accreditation information was missing. Overall, only eight hospitals' data could be used as per the requirements of the analysis. The data were then transformed into various parameters needed for the analysis. To improve commonality of interpretation across hospital data, certain macro-level constructs—either collected or transformed from data—were used for the analysis. The final data collated were coded appropriately to ensure confidentiality of the participants and their information. The CEO perception survey was completed by all 14 participating hospitals and were all used in the analysis.

Data Analysis

The final collated data were analyzed using the statistical tool IBM® Statistical Package for the Social Sciences (SPSS®) Statistics version 20. As the data collected were

Appendix 1: CEO questionnaire survey results

Q	1 = Fully agree; 2 = Agree; 3 = Neither agree/ disagree; 4 = Disagree; 5 = Fully disagree	Hospital 1	2	3	5	6	7	8	9	11	12	13	14	Average	SD
1	The facility is better managed and data and evidence for decision-making	2	1	2	2	1	2	1	2	1	1	1	4	1.636364	0.924416
2	Communication between departments and patient care teams has improved. Interdepartmental and interpersonal relationships have improved	3	1	2	2	1	3	2	2	2	2	2	4	2.181818	0.873863
3	Staff demonstration of their response to emergencies like fire, CPR, etc., has improved	1	1	2	1	1	1	1	1	2	1	2	3	1.454545	0.687552
4	Accreditation has helped to identify potential leaders in the organization	2	2	1	1	1	3	2	4	2	1	2	4	2.181818	1.07872
5	Staff morale has improved	3	2	2	1	1	2	1	3	2	2	2	4	2.181818	0.873863
6	Awareness of statutory compliances has improved	1	1	1	1	1	1	1	1	1	1	1	4	1.272727	0.904534
7	Complaints and grievances of patients have reduced	4	2	2	1	1	2	1	4	3	4	3	3	2.636364	1.120065
8	Overall quality of care to patients has improved	2	1	1	1	1	1	1	3	2	1	2	4	1.727273	1.00905
9	Overall, this has been beneficial to the organization	2	1	1	1	2	1	1	3	2	1	2	4	1.818182	0.98165

panel data across various time periods and various hospitals, it required a multivariate analysis to bring out the event period effects. To use the data for analysis, the data across the hospitals had to be brought to a comparable level. The number of beds was used as a factor to normalize the financial data for analysis. The initial analysis involved finding the correlation between important parameters collected (Appendix 2).

The multivariate analysis was done using the generalized linear model multivariate analysis tool provided in SPSS®. The dependent variables used were income per used bed, expense per used bed, income over expense per used bed, and NABH-related recurring expense per used bed. The fixed factor was the time period of $t - 2$ to $t + 5$, where t indicated the year of receiving the first NABH accreditation.

The results of the multivariate analysis indicated significant results. The Box's test result is nonsignificant ($p = 0.101$), indicating that the observed covariance matrices of the dependent variables are equal across groups. The multivariate tests are significant as indicated by the values of Pillai's Trace ($p = 0.043$), Wilks' Lambda ($p = 0.005$), Hotelling's Trace ($p = 0.000$), and Roy's Largest Root ($p = 0.000$). This indicates that there are between-group differences and significant differences across various time periods on the dependent parameters. Levens' test is nonsignificant, indicating that the error variance of the dependent variables is equal across groups. From the analysis of the between-subjects effect, it is noticed that the time point ($t +/-$) has a significant effect on the income earned. The parameter estimates indicate that the time period $t - 2$ to $t + 1$ has a significant effect on the income earned with a decreasing negative effect. In the time period $t - 2$ to t, there is a significant effect on expenses with a decreasing negative effect. There is a significant negative effect during time $t - 2$ on income over expense. There are no significant effects on the NABH-related recurring expenses.

The contrast results of the customized hypothesis tests indicate that there is significant differences in income between time periods $t - 2$, $t - 1$, t, $t + 1$, and $t + 2$ with respect to $t + 5$. Also, there are significant differences in expense between time periods $t - 2$, $t - 1$, and t with respect to $t + 5$, and there is significant differences in income over expense between time periods $t - 2$, and $t + 3$ with respect to $t + 5$. Further, there are reducing negative coefficients indicating a reducing negative effect.

The survey questionnaire of CEOs containing nine questions (Appendix 1) yields averages, which indicate that the CEOs agree that NABH accreditation has improved overall patient care and that it has been beneficial for the organization.

RESULTS

The correlation analysis results indicate that income has a strong significant positive correlation (>0.7) with the number of admitted insurance patients, the number of nurses, and expenditure. The expenditure has a strong significant positive correlation with the number of admitted insurance patients, the number of nurses, and income. The income over expenditure has a significant positive correlation (>0.6) with income. The NABH-related recurring expenses has a significant positive correlation (>0.6) with number of staff in the Quality Department and Hospital Infection Control Department.

Appendix 2: Correlations matrix of some parameters

		Average stay	*Insurance patients*	*Doctors*	*Nurses*	*Staff quality*	*Staff hospital infection control*	*Income*	*Expenditure*	*Income over expense*	*NABH one-time expense per bed*	*NABH recurring expense per bed*
Average stay	Pearson correlation	1	0.598**	0.515**	0.781**	0.251	0.327*	0.701**	0.715**	0.329*	−0.239	0.313*
	Significance (2-tailed)		0.000	0.000	0.000	0.055	0.012	0.000	0.000	0.011	0.068	0.016
	Number	59	59	58	58	59	58	59	59	59	59	59
Insurance patient	Pearson correlation	0.598**	1	0.239	0.696**	0.346**	0.383**	0.766**	0.763**	0.442**	−0.02	0.508**
	Significance (2-tailed)	0.000		0.071	0.000	0.007	0.003	0.000	0.000	0.000	0.882	0.000
	Number	59	59	58	58	59	58	59	59	59	59	59
Doctors	Pearson correlation	0.515**	0.239	1	0.408**	0.225	0.367**	0.332*	0.301*	0.361**	−0.235	0.266*
	Significance (2-tailed)	0.000	0.071		0.001	0.089	0.005	0.011	0.022	0.005	0.075	0.043
	Number	58	58	58	58	58	58	58	58	58	58	58
Nurses	Pearson correlation	0.781**	0.696**	0.408**	1	0.551**	0.465**	0.839**	0.826**	0.528**	−0.085	0.566**
	Significance (2-tailed)	0.000	0.000	0.001		0.000	0.000	0.000	0.000	0.000	0.526	0.000
	Number	58	58	58	58	58	58	58	58	58	58	58
Staff quality	Pearson correlation	0.251	0.346**	0.225	0.551**	1	0.687**	0.399**	0.365**	0.387**	−0.119	0.64**
	Significance (2-tailed)	0.055	0.007	0.089	0.000		0.000	0.002	0.004	0.002	0.371	0.000
	Number	59	59	58	58	59	58	59	59	59	59	59
Staff hospital infection control	Pearson correlation	0.327*	0.383**	0.367	0.465**	0.687	1	0.49**	0.463**	0.429**	−0.118	0.656**
	Significance (2-tailed)	0.012	0.003	0.005	0.000	0.000		0.000	0.000	0.001	0.379	0.000
	Number	58	58	58	58	58	58	58	58	58	58	58
Income	Pearson correlation	0.701**	0.766**	0.332*	0.839**	0.399**	0.49**	1	0.988**	0.622**	−0.083	0.429**
	Significance (2-tailed)	0.000	0.000	0.011	0.000	0.002	0.000		0.000	0.000	0.53	0.001
	Number	59	59	58	58	59	58	59	59	59	59	59
Expenditure	Pearson correlation	0.715**	0.763**	0.301*	0.826**	0.365**	0.463**	0.988**	1	0.492**	−0.079	0.394**
	Significance (2-tailed)	0.000	0.000	0.002	0.000	0.004	0.000	0.000		0.000	0.551	0.002
	Number	59	59	58	58	59	58	59	59	59	59	59
Income over expense	Pearson correlation	0.329*	0.442**	0.361**	0.528**	0.387**	0.429**	0.622**	0.492**	1	−0.071	0.416**
	Significance (2-tailed)	0.011	0.000	0.005	0.000	0.002	0.001	0.000	0.000		0.593	0.001
	Number	59	59	58	58	59	58	59	59	59	59	59
NABH one-time expense per bed	Pearson correlation	−0.239	−0.02	−0.235	−0.085	−0.119	−0.118	−0.083	−0.079	−0.071	1	0.04
	Significance (2-tailed)	0.068	0.882	0.075	0.526	0.371	0.379	0.53	0.551	0.593		0.761
	Number	59	59	58	58	59	58	59	59	59	59	59
NABH recurring expense per bed	Pearson correlation	0.313*	0.508**	0.266*	0.566**	0.64**	0.656**	0.429**	0.394**	0.416**	−0.04	1
	Significance (2-tailed)	0.016	0.000	0.043	0.000	0.000	0.000	0.001	0.002	0.001	0.761	
	Number	59	59	58	58	59	58	59	59	59	59	59

*Correlation is significant at the 0.05 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed)

The correlation results indicate that the income increases in tandem with an increase in insurance-covered patients. Further, the number of nurses also has a positive impact on the income, indicating that more nurses correspond to an increase in number of patients handled, and thus the income. The results indicate that NABH-related recurring expenses are tied to the number of staff in the Quality Department and Hospital Infection Control Department, which also indicates the increased emphasis on these functions with the NABH accreditation process.

All the major multivariate tests are being validated as indicated in the section on "Data Analysis." The time period has a significant effect on the income earned per used bed. This is indicated by the parameter estimates and contrast results, showing that accreditation has a significant positive impact on the income per used bed with increasing time.

The expenses per used bed also experience a significant reducing negative effect from period $t - 2$ to t, which indicates that the postaccreditation expenses are not significantly impacted. The postaccreditation expense per used bed does not have significant effects for the rest of the period. This shows that accreditation has a favorable impact on expense per used bed and does not significantly increase the expense per bed.

The income over expense also experiences a significant negative impact in the period $t - 2$. The contrast results across $t - 2$ through $t + 4$ in comparison with $t + 5$ also show a significant effect for period $t - 2$ with a negative contrast estimate. This indicates that the long-term income over expense is positively influenced by accreditation, i.e., the growth in income exceeds the growth in expenses.

The NABH-related recurring expense has no significant effects across the time groups, indicating that this is not negatively impacting the financial performance of the hospitals.

Overall, the results indicate that NABH accreditation has a favorable long-term impact on financial outcomes of income, expenses, and income over expense.

The CEO questionnaire yields the result that the CEOs on average agree or strongly agree that NABH accreditation has helped in achieving the following:

- Improved awareness of statutory compliances.
- Improved staff responses to emergencies like fire, cardiopulmonary resuscitation (CPR), etc.
- Better facility management as data and evidence are used for decision-making.
- Better overall quality of patient care.

Overall, this has been beneficial to the organization.

The CEOs' opinions are indicative of the benefits perceived due to NABH accreditation. In the qualitative section of the CEO survey, almost all declared that documentation had vastly improved in their institutions. The "improvement in medication safety" and "reduction in clinical and nonclinical errors" were cited in a number of questionnaires. Several CEOs mentioned an improvement in teamwork among staff and a "healthy work environment", leading to "higher staff satisfaction levels". There were no negative remarks. This combined with the quantitative data provides a strong indicator of long-term benefits, both financial and nonfinancial, of NABH accreditation.

DISCUSSION

The goal of this study was to explore the financial impact of NABH accreditation on hospitals based on CEO perspectives and financial outcomes. The attempt has been to bring out the benefits of the NABH accreditation on the financial health of the organization. The CEOs of participating hospitals agree that the NABH accreditation has been beneficial to the organization and that the overall quality of care to patients has improved. In addition, they also strongly agree that the awareness of statutory compliances has improved, the staff response to emergencies like fire, CPR, etc. has improved, and that data and evidence-based decision-making have helped in managing the facility better. These are indicators that the dynamics of providing high-quality health care have been positively influenced by NABH accreditation. For the purpose of this study, we have not attempted to quantify these perceived improvements into economic terms, such as potential savings from reduced liabilities arising out of reduced adverse events, or those of long-term implications of improved staff responsiveness and higher patient satisfaction. At the same time, the available information on financial outcomes is itself very encouraging, and may encourage more hospitals to seek and acquire NABH accreditation, thus improving investments in the quality of health care in India. This exploratory study highlights the factors indicating positive financial outcomes for hospitals. Specifically, the study has found that the income per used bed shows an increasing trend after the accreditation period. While the rate of increase is relatively low during the first 3 years, it substantially rises from the fourth year. This can be explained by the lower rate of increase of expense per used bed during the same period. This shows that while the expenses may be seen as increasing, the rate of increase in income is higher. This is also seen from the trend of income over expense, which also indicates greater surplus being generated. During the initial years of accreditation, the income over expense per used bed indicates a flat trend but increases from the fourth year with an increasing trend thereon. This indicates that the initial years of accreditation are

spent in consolidating and strengthening the quality of health care services, but the investments are likely to pay off even more in the longer run. Once the process and dynamics brought about by NABH accreditation is internalized in the initial years, a positive impact is seen on both the quality of health care and financial parameters.

Data analysis and the ensuing results indicate that NABH accreditation has a favorable long-term financial impact for hospitals. This is an encouraging sign for hospitals to adopt and maintain quality accreditation. Based on anecdotal evidence, the survey team heard that the cost of operations go up for hospitals to acquire and maintain NABH accreditation, and also the concern that these costs may need to be ultimately passed on to the patients resulting in increased cost of quality health care. While this may seem to be initially true, this study indicates that this increase in costs is a temporary occurrence during the preceding and initial years after the accreditation and stabilizes thereafter once the processes are set. The study results are an indication that the long-term economic benefits to hospitals are likely to be positively influenced by NABH accreditation, primarily due to rising revenues. Further study on the wider economic impact would be useful, which also factor in the economic benefit to patients vis-à-vis the changes in resource use arising out of accreditation. Such studies could then include calculations of the net present value of these and other economic benefits vis-à-vis the initial investments and opportunity costs invested in accreditation. This study was done with an intention to find the CEO perspectives and financial outcomes of NABH accreditation in a situation where no similar study has been done before. This led to the challenge of data collection both in terms of what to collect and how to collect it. Since the nature of the data is confidential, few hospitals did not share data in the format requested. The same limitation may exist in the future studies where data may be less forthcoming in required detail for studying the long-term economic impact.

At the same time, these indicative results need more robust validation. More sample sets ranging from $t - 2$ to $t + 5$ are required to reach more robust conclusions. Further, a balanced design needs to be done for the entire time period. Future studies will have to control for hospital characteristics like number of beds, location, differences based on specialties, the ownership type of hospitals, etc. to have more robust readings of financial as well as economic impact, and also use similar hospitals which did not undergo accreditation as a counterfactual. This study is limited to private hospitals and has excluded government-run hospitals, where the driver is not the financial impact on the organization, but the economic impact aspect would still be relevant and useful to justify investments in quality. Given the sensitive nature of the data, the current study found significant bottlenecks in receiving data from the hospitals in the required formats; as a result, the data collected were not as detailed as initially planned. One of the lessons learnt is that if sufficient time and effort is spent in gaining the confidence of senior management at the hospitals along with assurances that hospital-specific data would be kept confidential, the bottlenecks faced could be reduced. Future studies will have to take into account differences, such as the financial goals of each specific hospital and the effect it has on how the hospital is managed.

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ORIGINAL ARTICLE

Assessment of the Level of Anxiety and Associated Factors among Heart Patients Waiting for Cardiac Procedure at a Tertiary Care Hospital in North India

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ABSTRACT

Introduction: The anxiety experienced among patients may have various causes, including not feeling cared about as an individual, not explained by physician regarding plan of treatment, too much waiting time before the procedure begins, and the physical discomfort like not getting proper bed by the hospital authority.

Anxiety can cause behavioral and cognitive changes which can result in increased tension, apprehension, nervousness, and aggression. Some patients may become so nervous and apprehensive that they are unable to understand or follow simple instructions. Some patients may be so aggressive and demanding that they require constant attention of the nursing staff and may end up fighting with the health care provider.

Need of this study: With few public-run cardiac centers, it was always a difficult task of managing the huge patient load on limited beds by the management. Nonavailability of beds forced the clinicians to keep the patients waiting for admission on trolley or postpone the surgery. In addition, it was also noticed that the doctors did not adequately counsel the patients regarding their plan and procedure of treatment. As a result, there is always disgruntlement among the patients, resulting in increased anxiety, apprehension, and aggression.

Objective: To assess the level of anxiety of patients before the cardiac procedure as per the Hamilton Anxiety Rating Scale (HAM-A) and to analyze whether adequate time is being given by the treating physicians in counseling of the patients about the treatment plan.

Materials and methods: This is a cross-sectional study done on patients waiting for cardiac procedure in a cardiac center of a tertiary care hospital. Patients admitted on daycare basis for the procedure were also included. All the patients waiting for the procedure were assessed at the time of admission. Participants were assessed using a performa containing two parts. Part one of the performa was used to capture the demographic profile of the patients and questions related with their disease condition. The second part consisted validated HAM-A. The HAM-A is a widely used scale in both clinical and research settings. The scale consists of 14 items. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0 to 56, where <17 indicates mild severity, 18 to 24 mild to moderate severity, and 25 to 30 moderate to severe. These patients were then grouped as having mild, moderate, and severe anxiety based on HAM-A score.

Results: The study was carried out to find out the severity of anxiety of the patients waiting for the cardiac procedure. Total 110 patients were enrolled in the study. It was found that 63 (70.8%) male and 9 (42.9%) female patients had mild anxiety. In contrast, 4 (19%) male and 5 (5.6%) female participants had severe anxiety. There was statistically significant relationship ($p < 0.05$) in the anxiety level between male and female patients. Patients who were not adequately counseled by the physician were found to be suffering more moderate (33.3%) and severe (16.7%) anxiety in comparison with other groups.

Conclusion: There is no doubt that anxiety is very much relevant before any cardiac procedure. Counseling of the patients before any procedure plays a significant role in reducing the severity of the anxiety level.

Keywords: Anxiety, Cardiac procedure, Teaching hospital.

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INTRODUCTION

Anxiety, as defined by Wilson-Barnett,[1] is the fear of the unknown, disproportionate to the threat and related to the future. It is characterized by an individual's inability to specify the source of the threat. Waiting for the cardiac or surgical procedure can be a major source of stress and anxiety. These feelings are directly related to the invasive nature of the procedure and to uncertainties related to diagnosis.[2] In daily practice, it is observed that patients do not understand clear instructions, or appropriate information is not provided by the health care provider. In this context of waiting and anxiety, relatives are also stressed and share feelings and uncertainties with the patients.

Evidence has indicated that properly preparing the patients and giving them some information about the procedure before surgery and invasive procedures might not only decrease their anxiety but could also increase their tolerance to deal with postoperative pain. Besides,

it was associated with feeling a higher level of well-being and quality of life.[3-7]

Anxiety has been shown to lead to high levels of stress, creating delays in recovery and increased length of stay within the hospital.[8] Historically, nurses have handled patient physiological needs with great confidence, but patient psychological needs, such as the manifestation of anxiety, have not received the same attention.

While searching the literature for data on precardiac catheterization and patient anxiety, it became apparent that there is very little published research on these topics. It has been noted that preprocedure psychological preparation reduces hospital-induced anxiety. Cupples[9] and Martin[10] both found that patients who received educational information preoperatively were shown to have less nausea, vomiting, pain, and postoperative complications, and had deceased lengths of hospital stay.

Helping patients cope with the anxiety of medical procedures is a two-way street. Health professional needs to know the type of information that is necessary and that will be of benefit, but they need to tailor this to the needs and capabilities of the individual. For the benefit of the argument, let us assume the patient is about to undergo some cardiac procedure. Five broadly overlapping types of information will be of benefit. The first of these is simple factual information about the procedure(s) and what will happen. The second is how much this will make the person feel better in terms of their senses. For example, they may want to know that it is perfectly normal to feel sick following esthetics. The third relates to any particular emotions that may be evoked and the fourth a time frame for recovery. Although not strictly related to the procedure, it is important for the patient to know how long they may be out of work as a result of their condition.

With all of these issues, effective communication is the key to helping reduce anxiety. Not all patients like to ask questions and not all know what questions to ask. It should not be assumed that silence equates to satisfaction. Neither should it be assumed that having imparted information it has been remembered or understood. Even the most relaxed and intelligent person can find themselves overwhelmed with information and terminology. As much as information can help to reduce anxiety. It must be remembered that anxiety also serves to make concentration poor and hence, block perceptibility of information. For this reason, time, careful use of language, and checking that the information is understood are essential skills for health care providers in helping patients cope with anxiety.

Need of This Study

The study was conducted in a cardiac center which is a part of a bigger tertiary care teaching hospital in North India. The center since its inception has witnessed a constant increase in the number of patients visiting its outpatient (by 23.13%) and inpatient (by 35.79%) department over 2 years, and the numbers of cardiac procedures have increased accordingly during the same duration. Being the few public-run cardiac centers, it was always faced with the daunting task of managing the huge patient load on limited beds. Nonavailability of beds forced the clinicians to keep the patients waiting for admission on trolley, and at the same time they did not confirm as to whether the procedure will be conducted or not on the same day. In addition, it was observed that the doctors did not adequately counsel the patients regarding the plan and procedure of treatment. This left the patient feeling uninformed and nonparticipatory in the decision of his/her treatment, which led to disgruntlement among the patients visiting the center, creating an unpleasant doctor–patient relationship.

Aim

To assess the level of anxiety and associated factors among heart patients waiting for cardiac procedure at tertiary care hospital.

Objectives

- To assess the level of anxiety of patients before the cardiac procedure as per HAM-A.
- To analyze whether adequate time is being devoted by the treating physicians in counseling of the patients about the treatment plan.

MATERIALS AND METHODS

This is a cross-sectional descriptive study done on patients waiting for cardiac procedure in a cardiac center of a tertiary care hospital. Purposive sampling was done wherein willing patients above 18 years of age awaiting the cardiac procedure were included in the study. Patients admitted on daycare basis for the procedure were also included. All the patients were assessed only at the time of admission. Patients undergoing any emergency cardiac procedure or those patients who were already admitted before in the center were not included in the study. Patients were assessed using a performa containing two parts.

Part one of the performa was used to capture the demographic profile of the patients and questions related with their disease condition. This part had questions pertaining to education level, income level, disease duration, number of visits before the current procedure, time taken for the procedure, whether the patient was explained before the procedure or not by the physician, and whether patients wish to get admitted at least 1 day prior to cardiac procedure.

The second part consisted the validated HAM-A.[11] The HAM-A is widely used scale in both clinical and research settings. The scale consists of 14 items, each defined by a series of symptoms and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). The reported levels of interrater reliability for the scale are good. It takes 15 to 20 minutes to complete the interview and score the results. Each item was scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0 to 56, where <17 indicates mild severity, 18 to 24 mild to moderate severity, and 25 to 30 moderate to severe.

The data were compiled and analyzed using Statistical Package for the Social Sciences software (version 20). It was analyzed through applying descriptive and inferential analysis, such as frequencies, percentage, mean score, and chi-square test. The 95% confidence interval and 5% significance level were used to evaluate the findings.

RESULTS

The current study was aimed to test the severity of anxiety in patients attending the cardiac center for cardiac intervention and was admitted for intervention on the same day. The patients were taken for procedure on same day without providing a proper bed. Such patients were not properly counseled about their plan of care by their treating physician prior to the procedure, leaving them unaware of their treatment and diagnosis. Total 110 patients were enrolled in the study. These patients were then grouped having mild, moderate, and severe anxiety based on HAM-A score.

Table 1 shows that total 110 patients participated in this study. The age distributions of the patients were as follows: 19 of the participants (17.3%) were <40 years, 59 of them (53.6%) were between 41 and 60 years, and 32 of them (29.1%) were 61 years or older. Among all the patients enrolled, maximum belonged to the cardiac vulnerable age group of 41 to 60 years, with the mean age of the patients attending the center being 52.23 ± 14.07 years giving us a range of 16 to 89 years. Males (80.9%) were found visiting the cardiac center more than females (19.1%). Not much difference in the need for cardiac care was noted among patients belonging to urban (45.45%) or rural areas (54.54%). It was also interesting to note that maximum patients (58.2%) had received education up to class 12th, which could be corroborated to the fact that maximum patients visiting the center had a rural background.

Table 1: Demographic profile of the patients

Profile	*Number (n = 110)*	*Percentage*
Age (years)		
<40	19	17.3
41–60	59	53.6
>61	32	29.1
Sex		
Male	89	80.9
Female	21	19.1
Residential status		
Urban	50	45.45
Rural	60	54.54
Educational status		
Illiterates	29	26.4
Up to 12th	64	58.2
>12th	17	15.5

Table 2 shows the relationship between the demographic profile of the study population and the degree of anxiety. Statistically significant relationship was found between the gender and the degree of anxiety recorded. It was observed that male and female patients mostly suffered from mild anxiety (70.8 and 42.9%) and only 38.1%

Table 2: Relationship between the demographic profile and the degree of anxiety

		Mild		*Moderate*		*Severe*			
		n	*%*	*n*	*%*	*n*	*%*	χ^2	*p-value*
Gender	Female	9	42.9	8	38.1	4	19	7.125	0.028*
	Male	63	70.8	21	23.6	5	5.6		
	Total (n = 110)	72	65.5	29	26.4	9	8.2		
Education level	Illiterate	19	65.5	8	27.6	2	6.9	6.490	0.16
	Up to 12th	44	68.8	17	26.6	3	4.7		
	>12th	9	52.9	4	23.5	4	23.5		
	Total	72	65.5	29	26.4	9	8.2		
Residence	Rural	49	59.8	25	30.5	8	9.8	4.652	0.098
	Urban	23	82.1	4	14.3	1	3.6		
	Total	72	65.5	29	26.4	9	8.2		
Income (Rs/month)	0	2	33.3	4	66.7	0	0	9.952	0.12
	<5,000	30	65.2	14	30.4	2	4.3		
	5,000–10,000	17	68.0	6	24.0	2	8.0		
	>10,000	23	69.7	5	15.2	5	15.2		
	Total	72	65.5	29	26.4	9	8.2		

Table 3: Clinical profile and anxiety level of patients

		Mild anxiety		*Moderate anxiety*		*Severe anxiety*			
		n	*%*	*n*	*%*	*n*	*%*	χ^2	*p-value*
Disease duration (years)	<5	55	66.3	21	25.3	7	8.4	0.779	0.94
	6–10	13	61.9	6	28.6	2	9.5		
	>10	4	66.7	2	33.3	0	0		
	Total	72	65.5	29	26.4	9	8.2		
Admitted before	Yes	37	72.5	11	21.6	3	5.9	0.126	0.93
	No	35	59.3	18	30.5	6	10.2		
	Total	72	65.5	29	26.4	9	8.2		
Admission before procedure	Yes	44	65.7	18	26.9	5	7.5	0.126	0.93
	No	28	65.1	11	25.6	4	9.3		
	Total	72	65.5	29	26.4	9	8.2		
Any similar procedure in past	Yes	21	70.0	7	23.3	2	6.7	0.390	0.82
	No	51	63.8	22	27.5	7	8.8		
	Total	72	65.5	29	26.4	9	8.2		
Explained by physician	Adequate explained	55	70.5	19	24.4	4	5.1	4.546	0.33
	Fully explained	14	53.8	8	30.8	4	15.4		
	Not explained	03	50.0	2	33.3	1	16.7		
	Total	72	65.5	29	26.4	9	8.2		

female patients were found suffering from moderate anxiety. There was no significant relationship between the level of education and degree of anxiety. However, not much difference was found in the number of patients suffering from mild and moderate degree of anxiety if their education level was taken into consideration. However, it was found that among all the patients suffering from severe anxiety, the more educated the patients, the more the anxiety was noted (23.5%). About 82.1% patients residing in the urban area were found to be suffering from mild anxiety, and 30.5% patients residing in the rural areas were found suffering from moderate anxiety. The area of residence did not make a significant difference among the patients suffering from severe anxiety. When patient anxiety was analyzed in relation to income, it was found that 30 (65.2%) patients had mild anxiety whose income level was less than Rs 5,000 per month. Fourteen (30.4%) participants in the same income group had mild anxiety and only two patients had severe anxiety. In contrast, only 23 (69.9%) participants had mild anxiety whose income was more than Rs 10,000 per month and 5 (15.5%) patients had severe anxiety in the same income level which is maximum in all income groups.

Table 3 illustrates the relationship between the clinical profile and the anxiety level among patients. Maximum responders had been suffering from the disease for less than 5 years and among these 55 (66.3%) were found to be suffering from mild anxiety, 21 (25.3%) moderate anxiety, and 7 (8.4%) with severe anxiety. There was no significant difference among the patients suffering from severe anxiety based on the duration of disease. Patients who were admitted for the first time were found to be more prone to moderate (30.5%) to severe (10.2%) anxiety in comparison with patients who have already been admitted earlier.

No significant difference was found among patients who have undergone a similar procedure in the past and those who got admission prior to the procedure in comparison with their counterparts. However, the results definitely highlight the importance of counseling by the physician; patients who were not adequately counseled by the physician were found to be suffering more moderate (33.3%) and severe (16.7%) anxiety in comparison with other groups, although no statistically significant relationship was found.

DISCUSSION

The study was carried out to find out the anxiety of the cardiac patients waiting for cardiac procedure.

In the present study, it is shown that the higher percentage of the sample [59 (53.6%)] was between 41 and 60 years of age group and out of them 89 (80.9%) were male patients.

This result is in parallel with the study that showed that according to the demographic data for patients undergoing only diagnostic cardiac catheterization procedures approximately two-thirds were male, whereas 56% of the patients were 65 years of age or older and 10% of the patients were 80 years of age or older.[12]

In the current study, it was observed that male and female patients mostly suffered from mild anxiety (70.8 and 42.9%) and 38.1% female patients were found suffering from moderate anxiety. In contrast to the study done in Iran,[13] it was found that women expressed greater anxiety than men. However, men and women

were similar at all levels of anxiety in their preference for information and control. Women were significantly more anxious ($p < 0.05$). Although more cardiac procedures are done in men, many studies mention that women are more affected by anxiety. According to some previous studies, the incidence in women ranged from 30 to 55%. About 45% of females present mild anxiety and 40% have moderate anxiety.[2,14,15]

In the present study, it was found that 55 (70.5%) patients had mild anxiety in spite of adequate information given by the physician before the procedure, 19 (24.4%) had moderate, and 4 (5.1) had severe anxiety. Above results definitely highlight the importance of counseling by the physician; patients who were not adequately counseled by the physician were found to be suffering more moderate (33.3%) and severe (16.7%) anxiety in comparison with other groups, although no statistically significant relationship was found.

Ng et al[16] studied the effect of preoperative counseling on the anxiety of patients undergoing oral surgery in Hong Kong. The Depression Anxiety Stress Scale was used to measure study participants' level of anxiety before surgery. The participants had statistically significant decrease in anxiety compared with the baseline measure. Our study corroborates with this study.

CONCLUSION

It is apparent from our study that counseling before cardiac procedure unquestionably reduces the anxiety level of the patients. Other factors, such as providing beds and other physical facilities to the patients further reduce the level of anxiety.

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ORIGINAL ARTICLE

Role of Standard Radiation Safety Practices in Public Health: An Experience of a Tertiary Care Teaching Hospital

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ABSTRACT

Ionizing radiation is employed for diagnostic and therapeutic purposes round the clock in hospitals. Hence, it is the prime responsibility of the hospital management to ensure the safety of the patients, staff, visitors, public, and the environment. Patient relatives and the public/visitors who are not concerned with medical use of radiation can become vulnerable to stochastic effects of scattered radiation close to therapeutic or diagnostic radiological facilities. This article highlights radiation safety measures that have public health relevance in hospitals having both diagnostic and therapeutic radiological facilities.

Keywords: As low as reasonably achievable, Optimum dose limits, Radiation, Radiation safety officer, Radioactive waste, Shielding.

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INTRODUCTION

Radiation and radioisotopes have been extensively used in the field of medicine, industries, agriculture, and research. The probability of human beings getting exposed to radiation is also on the rise.[1] The large public health problem created by the Chernobyl accident alongside radiation-induced deaths and diseases impacted the mental health of 350,000 people who moved out of the contaminated areas when relocation proved to be deeply traumatic experience.[2]

Radiation risks are reviewed by international and national organizations, such as the International Commission on Radiological Protection, the United Nations Scientific Committee on the Effects of Atomic Radiation, the UK's Radiation Protection Division of the Health Protection Agency (formerly the National Radiological Protection Board) and the National Council on Radiation Protection and Measurement in the USA. It is an important function of these bodies to continually assess and review publications from all over the world on the effects of exposure to ionizing radiation on human health and to reach a balanced view of the risks involved.[3] The Indian regulatory board is the Atomic Energy Regulatory Board (AERB). The mission of the Board is to ensure that the use of ionizing radiation and nuclear energy in India does not cause undue risk to health and environment. The regulatory bodies have laid down duties for the radiation safety officer (RSO) and safe dose limits for radiation workers and the general public (1 mSv/yr).[4]

The annual effective dose for the public should not exceed 1 mSv for whole body, 50 mSv for skin, and 15 mSv for lens of the eye.[5] However, natural radiation (atmospheric) background dose should not be considered in the dose limits for occupational workers and the members of the public (in India it is about 2.4 mSv/yr on average).[1]

The Department of Atomic Energy and Emergency Response Centers (DAE-ERCs) has spread all over India for effective response to any nuclear or radiological emergency, anywhere in the country.[1] To address challenges in the medical system and the public's concerns, the ABMS (American Board of Medical Specialties) has undertaken MOC (Maintenance of Certification) program for diagnostic radiology, radiation oncology, and radiologic physics.[6] The "US Public Health Emergency Medical Countermeasures Enterprise" has prioritized the development of expanded spectrum radionuclide decorporation agents as a countermeasure against nuclear threats, which greatly enhances the elimination of internalized radio nuclides through urine and feces.[7]

MATERIALS AND METHODS

A prospective study was carried out for a period of 6 months (i.e., May 7–October 7). The methodology adopted is direct informal interviews with the consultants, RSO, and technicians working in the department. Records and registers maintained in the department were perused to obtain relevant information.

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OBSERVATIONS AND DISCUSSION

Observations were made with relevance to public health in the following departments:

- *Nuclear Medicine Unit*: Planning considerations of nuclear medicine facility in the hospital have been done to ensure safety of workers and the public. It conforms to the specifications and guidelines given by the regulatory authority AERB.[8] The facility is situated far away from certain areas of the hospital like outpatient departments (especially Pediatrics, Obstetrics and Gynecology), maternity wards, and labor room. The walls, floors, and doors have hard, washable, nonporous and leak-proof covering. Plumbing lines and drain pipes are made up of leak-proof, corrosion-resistant material. The drain pipes from toilets located in patient areas (subjected to radioisotope like Iodine 131—I^{131}) open into a delay tank (interim storage tank) and thereafter disposed into the general sewage line when the level of radioactivity is harmless.

  Policies and procedures adopted in the hospital focus toward ensuring that the workers and public are not exposed to radiation in excess of limits specified by the competent authority AERB. Salient features of the hospital policy are as follows:

  – The RSO organizes radiation protection programs. The duties of the RSO include maintenance of records of doses of workers; inventory of radioactive sources received, used, and disposed; unusual incident report; cause of such an incident and remedial measures taken. The RSO also coordinates with authorized personnel by competent authority for inspection of the facility. The RSO also ensures that records of area monitoring (i.e., treatment room, nursing station, public areas, storage area, etc.), contamination monitoring, logbooks, and inventory records are kept available at the time of inspection.
  – Waste disposal policies and procedures adopted in the hospital comply with Atomic Energy (safe disposal of radioactive wastes) Rules 1987. The RSO assists/advices the Consentee (Head of the Institution) in obtaining the authorization from the competent authority for disposal of radioactive waste.

  Mode of waste disposal: Solid wastes like syringes, vials, swabs containing short-lived radioisotopes, such as $I,^{131}$ technetium 99 (Tc-99m), molybdenum (Mo-99), etc., are stored in a lead container for a period of 10 half lives. This is as per the guidelines. After that they are disposed of as per biomedical waste management guidelines. In case of liquid waste generated by patients undergoing treatment for malignant disorders of thyroid, patients are isolated and are allowed to use separate toilets. The sewage from the toilets is collected in a separate tank called "delay tank" which is for interim storage. When the level of radioactivity comes down and reaches the desired limits (monthly concentration at 22.2 $MBqm^{-3}$; MBq = Mega Becquerel) it is discharged into sewage lines by dilution and overflow technique. Low-activity short-lived isotopes where activity is less than microcuries are disposed of into sanitary sewage line with adequate flushing with water. This conforms to the BARC guidelines for disposal of waste in nuclear medicine (Fig. 1).[9]
- *Radiotherapy units like teletherapy/brachytherapy*: The hospital has two teletherapy units, one of which uses a radioactive source Cobalt-60 (Co60) and the other generates high-energy X-rays (linear accelerator) as an external source of radiation. The manufacturer obtains type approval certificate from the competent authority before selling the equipment to the hospital. Installation of units is done only after obtaining approval from the AERB. The doors are equipped with warning light and radiation symbol to caution patient attendees/visitors that the irradiation procedure is in progress and prohibits entry. In addition, it has got a 2 mm lead sheet covering which gives adequate protection against scattered radiation which can produce possible harmful effects to persons/visitors outside the door if at all lead sheet covering is not provided. The treatment room has got safety interlocks at doors to prevent inadvertent entry of visitors/patient attendees during irradiation. The hospital policies and procedures in the functioning of teletherapy/brachytherapy/X-ray units comply with

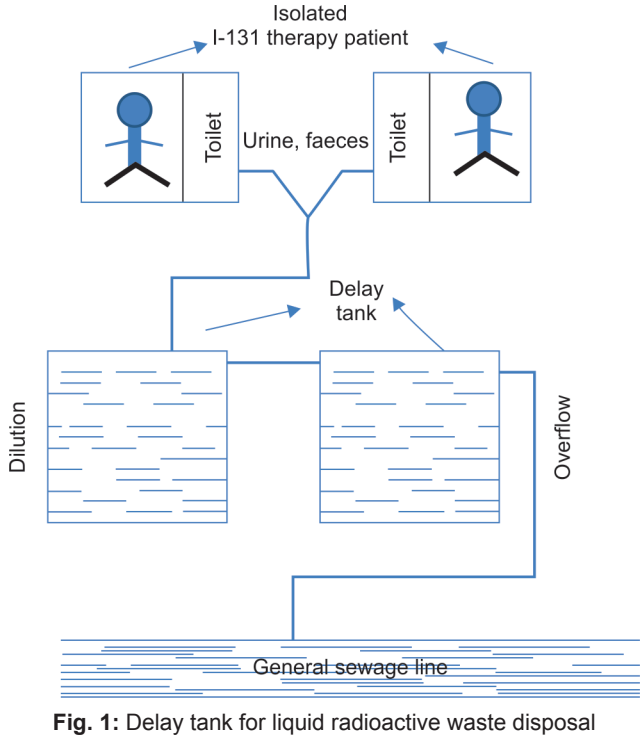

Fig. 1: Delay tank for liquid radioactive waste disposal

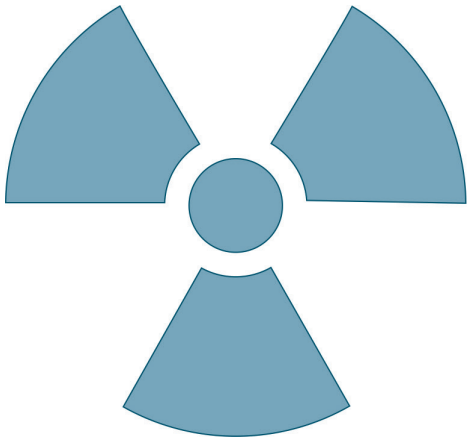

Fig. 2: Radiation symbol

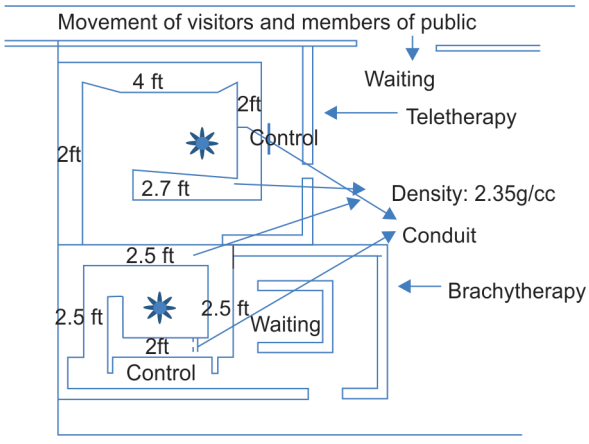

Fig. 3: Layout of the brachytherapy/teletherapy units with shielding

the guidelines mentioned in AERB Safety Code No SC/MED1, 2, 3 (Fig. 2).[10-12]

Shielding is of paramount importance in teletherapy/brachytherapy therapy units as the intensity of radiation employed is very high (megaelectronvolt) and the routine brick wall thickness of 23 cm provides no protection against scattered radiation. This can be detrimental to people passing by outside the room (workers/visitors). Shielding requirements are calculated after taking several factors into consideration so as to minimize the radiation outside the room (ALARA—As Low As Reasonably Achievable). They are workload, occupancy, nature of source, energy of radiation emitted, proximity to corridors where there is constant movement of visitors/public. Entrance to the treatment room is indirect, i.e., a maze is present in case of brachytherapy/teletherapy units to minimize shielding requirements for the main entrance door (Fig. 3).

Waste disposal in radiotherapy units: In the brachytherapy unit, prior to disposal, the institution has to submit the authorization form for waste disposal with an undertaking. The institution should also obtain transport authorization form from the AERB.[13] (Note: The decayed source from brachytherapy units is Iridium 192 with an activity of 1–2 curie.) The documents to be sent along with the consignment are (i) AERB authorization. (ii) Form S1 in triplicate. (Note: This is a requisition for waste collection to BARC facilities, Central Waste Management facilities, Kalpakkam.) The wastes are categorized and identified by color tags/code on the original transport container depending on the amount of radiation recorded at 1 mm from the external surface of the container. (iii) Transport Emergency card (TREM card), i.e., action to be taken in case of emergency situations like damage, fire engulfment, theft, unclaimed package in areas of public domain in situations where one has to rescue the injured and provide medical aid, fire containment exercise; and cordon off at a minimum 5 mm radius from an unclaimed

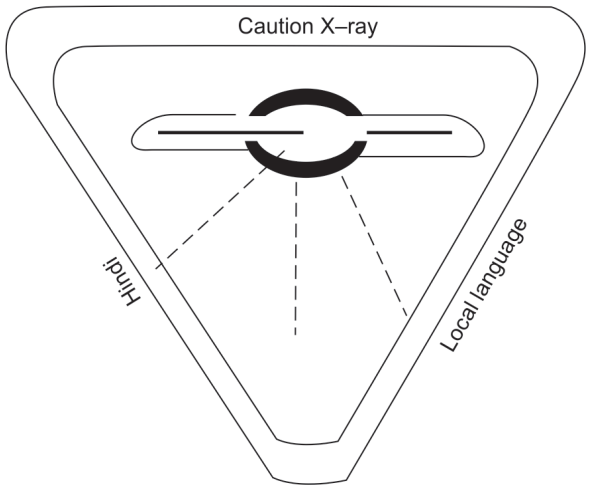

Fig. 4: "Caution Symbol" for X-ray unit

package. The receiver of the package should also be informed. The radioactive source is packed in original transport containers and transported by road and finally delivered to Central Waste Management Facilities, Kalpakkam, through the suppliers. The transport of radioactive sources is in accordance with specifications of AERB safety code for transport of radioactive material.[14] In case of teletherapy, the decayed source is Cobalt 60. The source is packed in original transport containers and sent to Canada for ultimate disposal.

- *Other radiology units like X-ray/computed tomography scan*: The doors have a lead lining 2 mm thick. The door displays X-ray symbol with a message "Caution X-ray" (Fig. 4). The message is written in two different languages (Hindi and English) for better understanding of visitors. One of the policies adopted in X-ray unit is that the relatives/visitors of the patient are instructed to hold crying/restless children. Personal protective devices are provided to these people rendering help within the room during X-ray procedure. This conforms to AERB safety code for medical diagnostic X-ray equipment and installations.[12]

CONCLUSION

A well-established radiation safety program is essential to fulfill the radiation protection requirements and to derive optimum diagnostic and therapeutic benefits from the use of radiation. Violation of the guidelines and endangering the health and safety of health care workers, patients, visitors, and public is unjustifiable and punishable under section 24, 25, 26 of Atomic Energy Act, 1962.

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ORIGINAL ARTICLE

Medical Audit of Documentation of Inpatient Medical Record in a Multispecialty Hospital in India

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ABSTRACT

Introduction: A medical record enables healthcare professionals to plan and evaluate a patient's treatment and ensures continuity of care among multiple providers. A study was conducted to do medical audit of documentation of inpatient medical record in a multispecialty hospital to assess whether the existing documentation procedure is as per laid-down policy.

Study design: Retrospective, descriptive study.

Study area: A 545 bed multispecialty hospital in medical ward, gynecology and obstetrics ward, surgical ward, ear, nose, and throat (ENT) ward, eye ward, pediatric ward, skin ward, and psychiatry ward.

Sample size: Systematic random sample of all inpatient medical records of select ward of last 12 months was done. Sample size was 320 case sheets, 40 from each department. The data collected were primary and the source was the discharge case files of the last 12 months available in the medical record section. The approach used for data collection was quantitative. The techniques applied were survey and observation. A structured checklist (audit tool) with 26 checklist points was developed keeping few of the quality indicators as the benchmark.

Findings: Gynecology and pediatric department records were not found appropriate. Psychiatry and dermatology dept record keeping was found appropriate as per laid-down policy. Planned care was not planned as per standard protocol in surgery department.

Recommendation: Sensitizing the clinical staff regarding the importance of proper documentation of the forms and hospital-wide standardization of the medical record keeping including admission and discharge summary. Rewarding the best performing department/unit and educating and training the responsible staff to make a complete record of every patient should be emphasized in the hospital. There should be monthly audit of the documentation procedure.

Conclusion: Medical records are technically valid health records that must provide an overall correct description of each patient's details of care or contact with hospital personnel. Medical records form a very important and critical document in hospital. These records are vital for legal purposes and for future planning of the hospital medical care.

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INTRODUCTION

A medical record enables healthcare professionals to plan and evaluate a patient's treatment and ensures continuity of care among multiple providers.[1] The quality of care a patient receives depends directly on the accuracy and legibility of the information the medical record contains.[2] Maintaining a complete record is important not only to comply with licensing and accreditation requirements, but also to enable a healthcare provider to establish that a patient received adequate care.[3]

Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit standards/criteria and the implementation of changes in practice if needed.[4]

The definition of clinical audit as per the National Institute of Clinical Excellence (NICE): "A quality improvement process that seeks to improve patient care & outcomes through systematic review of care against explicit criteria and the implementation of change".[5]

AIMS AND OBJECTIVES

Medical audit of documentation of inpatient medical record in a multispecialty hospital.

- To assess whether the existing documentation procedure is in accordance with the policy established by the hospital.
- To identify the lacunae in the same and to propose some possible solutions.

MATERIALS AND METHODS

Study Design

Retrospective, descriptive study.

Study Area

A 545 bed multispecialty hospital in medical ward, gynecology and obstetrics ward, surgical ward, ENT ward, eye ward, pediatric ward, skin ward, and psychiatry ward.

Sample Size

Systematic random sample of all inpatient medical records of last 12 months. Sample size was 320 case sheets, 40 from each department.

The following records were assessed for completeness of documentation: admission information (date of admission and serial number), demographics (age, sex, and patient number), history, examination, investigations, diagnosis, and treatment, attending doctor, procedures, summary-of-a-day, and follow-up. Other information checked to find out admission information: serial number and date of admission; demographics: age, sex, and hospital number; history: presence of documentation in correct section; examination: presence of documentation in correct section; investigations: presence of documentation in correct section; diagnosis: presence of documentation in correct section; treatment: presence of documentation in correct section; attending doctor: named doctor documented; procedures: procedures noted in correct section; summary-of-a-day: 1st, 2nd, and 3rd named doctor on-call. Follow-up was measured but excluded from the final primary outcome analysis as it is often completed at a different time to the rest of the inpatient book.

Data Collection

The data collected were primary and the source was the discharge case files of the last 12 months available in the medical record section. The approach used for data collection was quantitative. The techniques applied were survey and observation. A structured checklist (audit tool) was developed (Table 1) keeping few of the quality indicators as the benchmark.

Table 1: Checklist for clinical audit of medical records of inpatients

Clinical audit checklist	*Yes*	*No*
The hospital management develops an approach to improve accuracy of patient identification (identity proof)		
Medical record/health information retention and disposal policy is available, implemented, and monitored		
Medical record destruction log-book is maintained and retained with all mandatory entries as recommended in hospital policy document		
Hospital management has developed clearly defined informed consent policy and procedure for general and specific healthcare procedures		
The care provided to each patient is planned and written in the patient's record by the health professional providing the care		
The care for each patient is planned by the responsible physician, nurse, and other health professionals within 24 hours of admission to the hospital		
The plan is updated or revised, as appropriate, based on the reassessment of the patient by the care providers		
Orders are written when required, are legible, and follow organization policy		
All patients have an order for food in their record		
The order is based on the patient's nutritional status and needs		
The hospital management respects patient health information as confidential		
Hospital management has developed and implemented policies and procedure to prevent the loss or misuse of patient information. There is evidence of monitoring		
Patient records contain a copy of the discharge summary with all mandatory elements		
Discharge summary is prepared at discharge by a qualified individual		
Patient's referral/transfer policy, procedure, and referral forms are developed in accordance with hospital policy on patient referral		
All inpatients have an initial assessment(s) which includes an evaluation of physical, psychological, social, and economic factors and all assessment must be documented legibly		
The entries in the medical record must contain; Numeric date (D/M/Y) • Numeric time • Name with stamp • Appropriate initials of care provider		
Patient care record must be maintained/kept in their individual folders		
Alteration or correction in the medical record must remain legible by using a single line to score out the information to be corrected		
Medical records must not include abbreviations other than those approved, published, and made available to all staff		
All the discharge summary contains details of • Summary of diseases • Treatment given		

(Cont'd…)

(Cont'd…)

Clinical audit checklist	*Yes*	*No*
• Follow-up instruction		
• Instruction for patient		
Discharge summary contains ICD number		
Discharge summary contains signature of treating physician/surgeon		
MLC initiated in all cases where it should initiated		
LAMA patients have given their unwillingness of treatment		
Lab investigation form duly filled and entered in case sheet		

ICD: International Classification of Diseases; MLC: Medicolegal case; LAMA: Leaving against medical advice

OBSERVATIONS AND DISCUSSION

There is clearly a large discrepancy between the standard of record keeping in various departments. Psychiatry department was found to be best while gynecology and pediatric departments were found not satisfactory. Planned care was not provided to the patients as per standard protocol in surgical and psychiatric wards as shown in Table 2. Almost all departments (5–10%) were not documenting the food order in the medical records. Entry in medical record for date/name/sign was not present in most of the departments, notably in gynecology department (25%). Leaving against medical advice (LAMA) patients were discharge without taking unwillingness for treatment certificate in pediatric (10%) and gynecology department (5%) patients. International Classification of Diseases number was not found in gynecology (40%) and skin (20%) patients' discharge. Discharge summary was not found duly completed in gynecology, eye, and pediatric wards (20%). Alteration in medical records was found in almost all the departments.

Table 2: Various department-wise findings

Clinical audit checklist	*Medical ward (40)*	*Gynecology and obstetrics ward (40)*	*Surgical ward (40)*	*ENT ward (40)*	*Eye ward (40)*	*Pediatric ward (40)*	*Skin ward (40)*	*Psychiatry ward (40)*
The hospital management develops an approach to improve accuracy of patient identification (identity proof)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Medical record/health information retention and disposal policy is available, implemented, and monitored	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Medical record destruction log-book is maintained and retained with all mandatory entries as recommended in hospital policy document	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hospital management has developed clearly defined informed consent policy and procedure for general and specific healthcare procedures	Yes	Yes	Yes	Yes	Yes	No	No	No
The care provided to each patient is planned and written in the patient's record by the health professional providing the care (Graph 1)	Yes: 32 No: 8	Yes: 31 No: 9	Yes: 28 No: 12	Yes: 34 No: 6	Yes: 36 No: 4	Yes: 32 No: 8	Yes: 34 No: 6	Yes: 30 No: 10
The care for each patient is planned by the responsible physician, nurse, and other health professionals within 24 hours of admission to the hospital	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
The plan is updated or revised, as appropriate, based on the reassessment of the patient by the care providers (Graph 2)	Yes: 30 No: 10	Yes: 32 No: 8	Yes: 30 No: 10	Yes: 32 No: 8	Yes: 30 No: 10	Yes: 32 No: 8	Yes: 36 No: 4	Yes: 38 No: 2
Orders are written when required, are legible, and follow organization policy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All patients have an order for food in their record (Graph 3)	Yes: 31 No: 9	Yes: 30 No: 10	Yes: 34 No: 6	Yes: 30 No: 10	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 30 No: 10
The order is based on the patient's nutritional status and needs	Yes: 31 No: 9	Yes: 30 No: 10	Yes: 34 No: 6	Yes: 30 No: 10	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 30 No: 10

(Cont'd…)

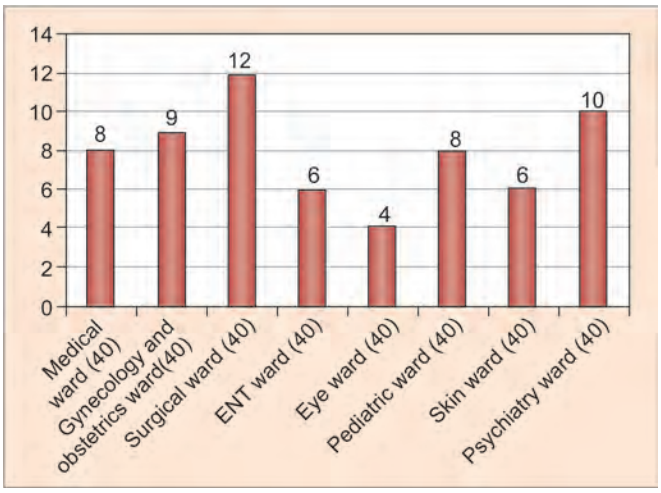
(Cont'd...)

Clinical audit checklist	*Medical ward (40)*	*Gynecology and obstetrics ward (40)*	*Surgical ward (40)*	*ENT ward (40)*	*Eye ward (40)*	*Pediatric ward (40)*	*Skin ward (40)*	*Psychiatry ward (40)*
The hospital management respects patient health information as confidential	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hospital management has developed and implemented policies and procedure to prevent the loss or misuse of patient information. Evidence of monitoring	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patient records contain a copy of the discharge summary with all mandatory elements	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Discharge summary is prepared at discharge by a qualified individual	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Patient's referral/transfer policy, procedure, and referral forms are developed in accordance with hospital policy on patient referral	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All inpatients have an initial assessment(s) which includes an evaluation of physical, psychological, social, and economic factors and all assessment must be documented legibly	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
The entries in the medical record must contain numeric date (D/M/Y) • Numeric time • Name with stamp • Appropriate initials of care provider (Graph 4)	Yes: 32 No: 8	Yes: 30 No: 10	Yes: 32 No: 8	Yes: 34 No: 6	Yes: 32 No: 8	Yes: 34 No: 6	Yes: 36 No: 4	Yes: 34 No: 6
Patient care record must be maintained/kept in their individual folders (Graph 5)	Yes: 34 No: 6	Yes: 36 No: 4	Yes: 36 No: 4	Yes: 34 No: 6	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 34 No: 6	Yes: 34 No: 6
Alteration or correction in the medical record must remain legible by using a single line to score out the information to be corrected (Graph 6)	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 34 No: 6	Yes: 34 No: 6	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 38 No: 2	Yes: 34 No: 6
Medical records must not include abbreviations other than those approved, published, and made available to all staff	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All the discharge summary contains details of • Summary of diseases • Treatment given • Follow-up instruction • Instruction for patients (Graph 7)	Yes: 34 No: 8	Yes: 32 No: 10	Yes: 34 No: 8	Yes: 36 No: 6	Yes: 32 No: 8	Yes: 32 No: 8	Yes: 36 No: 4	Yes: 34 No: 6
Discharge summary contains ICD number (Graph 8)	Yes: 36 No: 4	Yes: 34 No: 16	Yes: 34 No: 6	Yes: 36 No: 4	Yes: 36 No: 4	Yes: 38 No: 2	Yes: 32 No: 8	Yes: 38 No: 2
Discharge summary contains signature of treating physician/surgeon	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MLC initiated in all cases where it should be initiated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAMA patients have given their unwillingness of treatment (Graph 9)	Yes	Yes No: 2	Yes	Yes	Yes	Yes No: 4	Yes	Yes
Lab investigation form duly filled and entered in case sheet (Graph 10)	Yes: 38 No: 2	Yes: 32 No: 8	Yes: 36 No: 4	Yes: 36 No: 4	Yes: 34 No: 6	Yes: 38 No: 2	Yes: 34 No: 4	Yes: 38 No: 1

ICD: International classification of diseases; MLC: Medicolegal case; LAMA: Leaving against medical advice

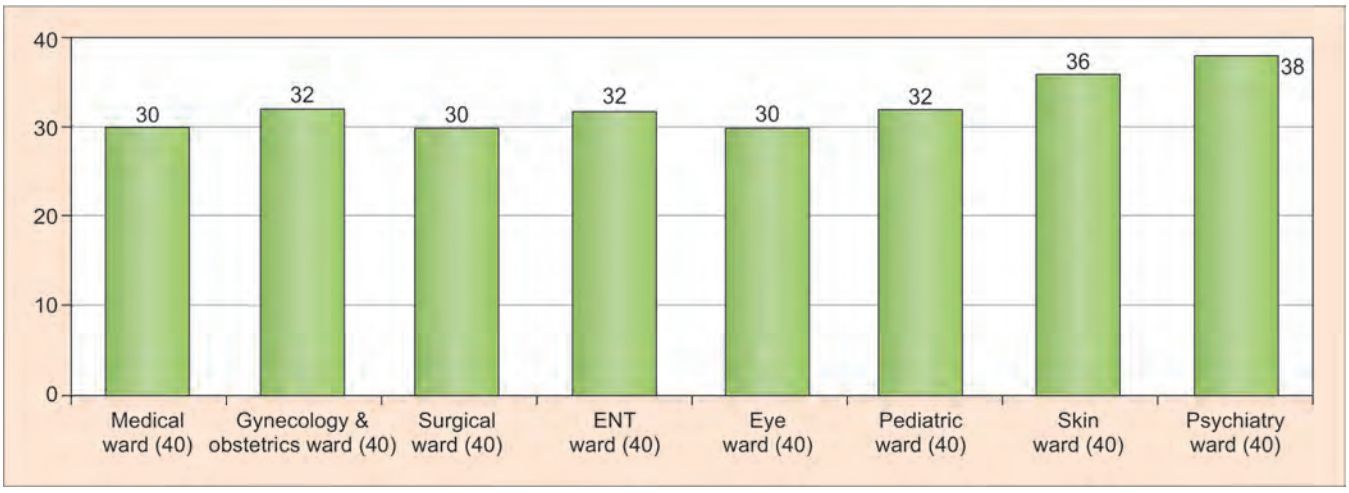
RECOMMENDATIONS

- Root cause analysis to be done to find out the reason for lapse in certain departments.

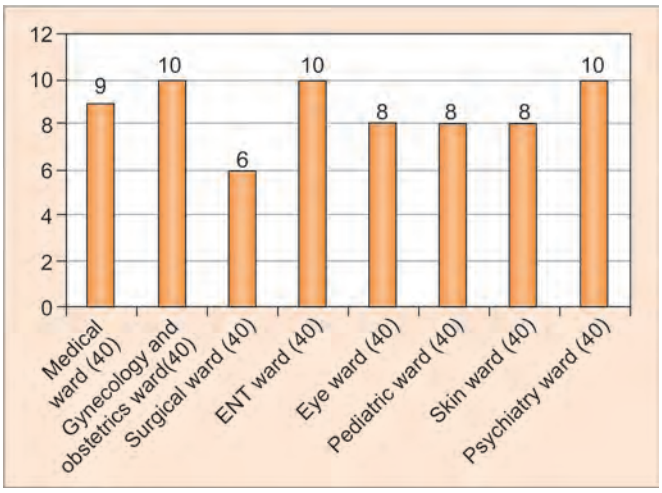


Graph 1: Planned care not provided to patient as per standard protocol

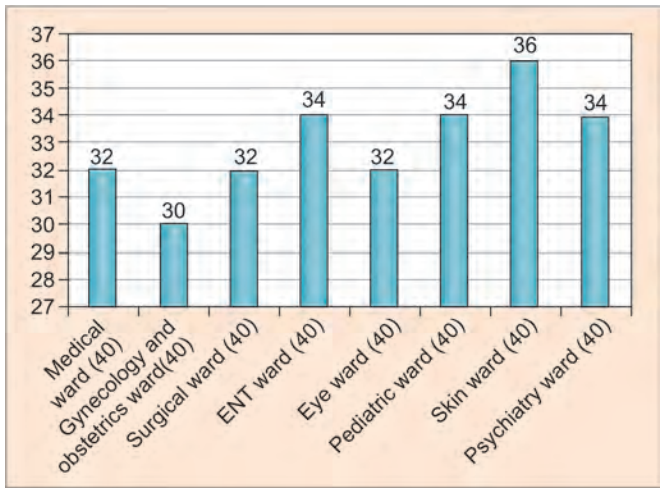
- Sensitizing the clinical and clerical staff regarding the importance of correct record keeping should be stressed to the interns both from a patient care and research perspective.[6]
- Hospital-wide standardization of the medical record keeping including admission and discharge summary.[7]
- Rewarding the best performing department/unit and educating and training the responsible staff to make a complete record of every patient should be emphasized in hospital.
- There should be quarterly medical audit of the documentation procedure.
- The interns/residents responsible for filling in the inpatient records should be taught how to adequately fill in the records in a scientific manner.[8]
- A weekly check of the medical records by consultant to assure that it is being completed.
- In addition, sections in the pro forma should be filled in according to their title, to maintain clarity of notes.[9]



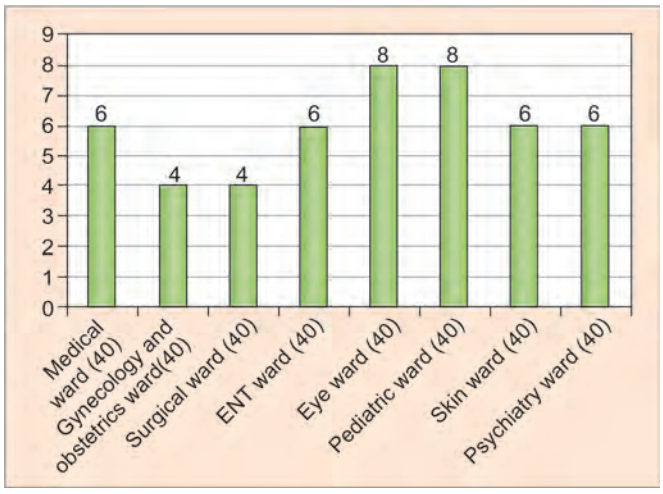
Graph 2: Updated or revised plan, as appropriate, based on the reassessment of the patient by the care providers



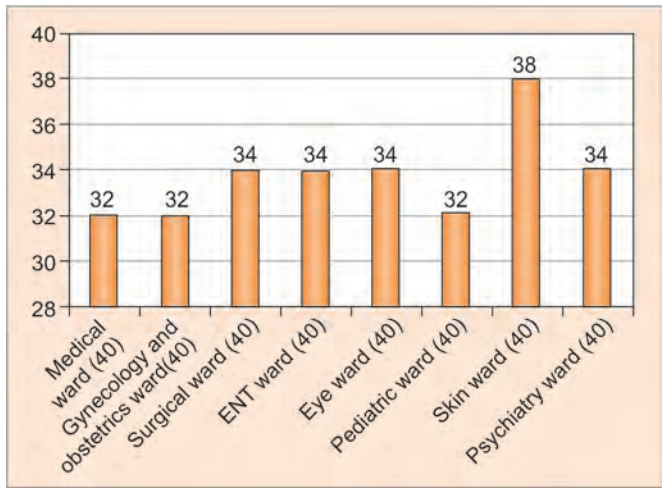
Graph 3: Nondocumentation of food order in medical record



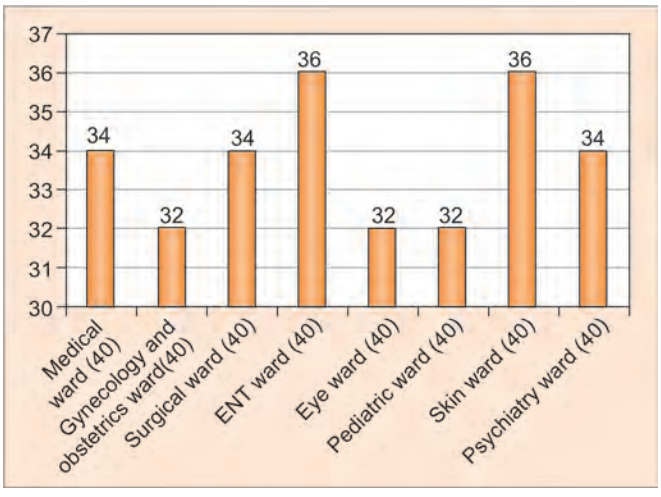
Graph 4: Entry in medical record for date/name/sign



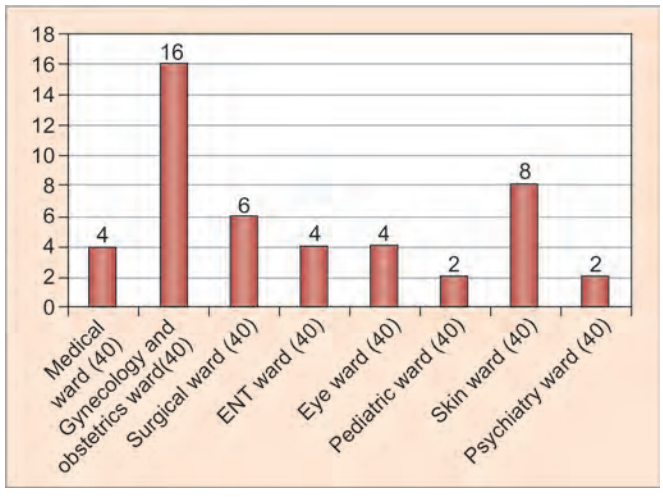
Graph 5: Patient care record not maintained/kept in their individual folders



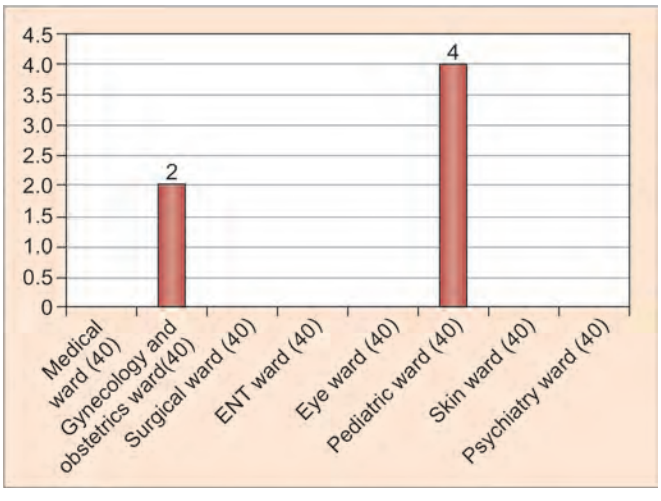
Graph 6: Alteration or correction in the medical record



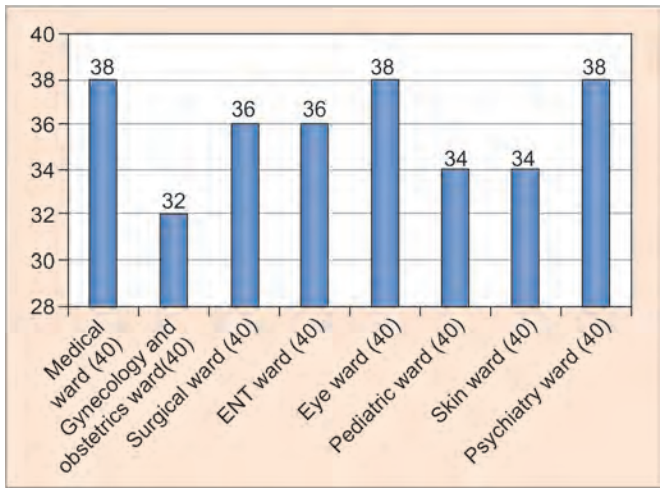
Graph 7: Completion of discharge summary



Graph 8: International Classification of Diseases number not entered in discharge summary



Graph 9: Leaving against medical advice patients have not given their unwillingness of treatment



Graph 10: Lab investigation form duly filled and entered in case sheet

- It should be the responsibility of the discharging doctor or ward in charge to return to the inpatient records and complete the required section on "follow-up". This should also be signed by the respective physician.[10]

CONCLUSION

Medical records are technically valid health records which must provide an overall correct description of each patient's details of care or contact with hospital personnel.

Medical records form a very important and critical document in hospital. These records are vital for legal purposes and for future planning of the hospital medical care. All possible steps should be taken to ensure that all hospital medical records are maintained in systemic and orderly manner. The importance of the medical records should also be communicated to all staff. Periodic audits of the medical records will help to determine the possible deficiency in keeping records, which can be improved and worked upon by the hospital.

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POLICY AND PRACTICE

Female Education and Health: Effects of Social Determinants on Economic Growth and Development

[1]Shibu John, [2]Prerna Singh

ABSTRACT

This study aims to discuss about girl's education and health's direct impact on economic growth. Education leads to higher social standing, independence, and greater autonomy in the decision-making process. Educated women will have greater control over family finances as they are more likely to spend discretionary resources on investments in human capital, such as health, education, and food. Desired millennium development goals cannot be achieved unless women are educated and are strengthened to take decisions about their own health in a suitable and conducive environment. This can only be attained by community-based demand side interventions for better education and maternal health. This study suggests that educated women were more likely to contribute to strengthen the economic growth of the nation than uneducated women. Female education level improves the health status of the family, which ultimately leads the economic growth and achievement of social development goals.

Keywords: Development, Economic growth, Education, Health indicators, Maternal health.

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BACKGROUND

The impact of girl's education does not limit to individual or one family, but for the complete society. Accordingly, not educating girls has a direct impact both on their families and on society as a whole. A World Bank study analyzes the effect of girls' education in many countries, where it was found that increase in girls' access to education creates a better milieu for economic growth and development, whereas research done in middle and lower income countries examined the impact of female education on gross domestic product, which consistently showed positive effects. Health indicators, such as the lower fertility rates among educated women increase a country's annual per capita income growth.

It is evident from a number of studies that large number of girls benefiting from education has a positive effect on a country's per capita income. This is true for both primary and secondary education. The outcome is particularly positive for middle and lower income countries. Thus, communities that do not prefer to invest in girls' education pay a high price for it in terms of lower economic growth and reduced per capita income. Educated women have greater chances to enter the formal labor market, where incomes are higher compared with those of informal or small-scale work. Formally educated female farmers increase productivity and their earnings can exceed those of men. Hence investing in female education and reducing gender biasness lead to economic growth. The social impact of female education is phenomenal.

Another crucial parameter for the growth is maternal health. It is the most important component of public health systems and refers to the health of women during the period of pregnancy, delivery, and postpartum care. Motherhood is often a positive and fulfilling experience, but for many it is associated with pain, ill-health, and even death. Maternal health is an important parameter for the nations due to its influence on women's health, survival of the newborn, and ultimate well-being of children.

The most prominent role of mothers' education is in reducing infant and child mortality, lowering fertility, and promoting children's education. Educated women are better equipped to avoid risky behavior by practicing safe sex. Education leads to higher social standing, independence, and greater autonomy in women's role in decision-making process in the household. Educated women will have greater control over family finances as they are more likely to spend discretionary resources on investments in human capital–health, education, and food. With all these positive impacts on economic and social development, society cannot afford to ignore girls' education. A "coverage gap" can be explained as the percentage of the community not able to access a particular medical intervention out of those who should be getting it.

EDUCATION AS A DETERMINANT OF HEALTH

Education is a vital determinant of health status in both the developed and developing economies. To consider

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the determinants of health, it is important to understand that poor physical circumstances are not the only factors that cause ill-health, lack of education and awareness can also lead to poor health care accessibility. The high health returns to investing in the education of women are undeniable. Well-educated individuals experience better health care services than the poorly educated, as explained by many self-reported health and low levels of morbidity, mortality, and disability. In contrast, poor educational attainment is linked with high level of infectious disease, self-reported poor health, lower survival rate when diseased, and shorter life expectancy.[1] Many studies have explained the importance of education for women in improving the overall health of the family. The studies associate education level of women with improved child health and reduced maternal deaths. With time, increasing girls' participation in school, fertility rates decrease. Education helps women in birth planning they should have at what interval. Women with formal education are more likely to carry on career, marry later, and are better informed on the nutritional and other needs of children than illiterate women.

While the exact mechanism of education's influence on health status is not known, it has been recommended that educating women alters the long-established balance of power within the family, leading to changes in decision-making process and allocation of resources within the household.[2-4] Thus, educated mothers are more likely to take advantage of modern medicine and comply with recommended treatments than uneducated women.[5] Moreover, education may change mothers' knowledge and perception about the importance of modern medicine for the care of their children. In a study of child nutrition in the Philippines, access to health care services benefited children of educated mothers more than children of mothers with less schooling, a finding which suggested that educated mothers were more likely to take advantage of available public health services.[6]

HEALTH INDICATORS THAT AFFECT ECONOMIC GROWTH

Many factors result in health inequalities, such as socioeconomic status (SES), quality of care, educational attainment, behavior, discrimination, biological and genetic characteristics, and the environment.[7] India is not unique in displaying inequalities in maternal and child health care.[8] It is well documented that poor mothers and children do inferior than their better-off peers in health-related outcomes.[9,10] The risk of maternal and infant mortality and pregnancy-related complications can be reduced by increasing access to quality preconception and inter conception care.[11] Also, healthy birth outcomes and early management of poor health conditions among infants can prevent death or disability. According to the Census of India 2011, India's percentage of urbanization was 31.15%, whereas average urbanization in high-focus states was 20.73%.[12] Despite increasing expenditure on health care and extraordinary medical breakthroughs, the health care system fails to adequately and equally serve many parts of the nation.[8] Therefore, to achieve sustainable development goals, the coverage of maternal and child health indicators needs to be improved.

Socioeconomic status is a multifaceted term used to characterize one's social position, often defined by income and educational attainment.[13] Recent studies suggest that SES plays a vital role in health outcomes, access to health care, and overall quality of care.[14,15] It would be prolific to relate the SES and coverage gap in the Indian context as the nation has a wide diversity in the SES among states. Individuals with a low SES are more likely to experience poor nutrition, inadequate housing with greater exposure to environmental hazards, and all other factors that contribute to poor health.

Education can modify women's beliefs about disease causation and thus influences both childcare practices and the use of modern health care services.[16] For example, findings from numerous studies of infant and child mortality conducted in developing countries over the last decade show a nearly universal positive association between maternal education and child survival.[17-20] These facts reveal that women are important promoters of health education and practices within the home, and the benefits of their education extend to their children and others.

Increasing girls' access to education and quality care improves maternal health. In Burkina Faso, mothers with secondary education are likely to give birth more safely in health facilities as compared with those with no education.[21] It has been assessed that an additional year of schooling for 1,000 women helps in preventing two maternal deaths.[22] Increasing girls' education has positive results on infant and child health. A child born to a mother who can read is more likely to survive past the age of 5 years than a child born to uneducated woman. In Indonesia, when mothers have no education child vaccination rates were lower with 19%. This figure increases to 68% when mothers have at least secondary school education.[23] In Bangladesh and Indonesia, for every additional year of formal education, a mother has the odds of having a child who is shorter than average for its age decreases by around 5%.[24]

Risk behaviors and social morbidities have produced alarmingly rising rates of health problems in youth. For example, in America, the problems of health illiteracy, low

self-esteem, and youth risk-taking behavior are becoming more visible in the community and public schools.[25,26] Schools in the developed and developing world face the challenge of addressing the needs of students who may not be health illiterate and who have significant health needs.[27]

Education decreases woman's risk of contracting human immunodeficiency virus (HIV) or transmitting HIV to her baby. In 32 countries, women who remained in school after primary school were five times more likely to know the basic facts about HIV than illiterate women.[28] According to the Global Monitoring Report Education for All 2010, in Malawi, only 27% of women with no education know that HIV transmission risks can be reduced by taking drugs during pregnancy, but that figure rises to 59% for women with secondary education.[23] A study in Zambia finds that HIV spreads twice as fast among uneducated girls.[28] A study in Uganda revealed that each additional year of education for girls reduces their chances of contracting HIV by 6.7%.[29]

The high case of maternal death in India and across the world continues to warn the well-being of families, ruin economic productivity, and lead to health disparities among communities. The risk of a woman in a developing country dying from a maternal-related cause during her lifetime is about 33 times higher compared with a woman living in a developed country. Maternal mortality is a health indicator that shows very wide gaps between rich and poor, urban and rural areas, both between countries and within them.

The main reasons for maternal deaths within the health system are the lack of skilled birth attendants, remoteness, delay in referral for emergency obstetric care,[30] delay or poor implementation of interventions at the facility level, and vertical delivery of care in which single elements of care are implemented without connection with the comprehensive care.[31] Maternal mortality is deeply existed with risk factors, such as low education among mothers, poverty, and gender bias. Poor education and no or low income leave women dependent on their husbands. High levels of illiteracy reduce knowledge about prenatal care and nutritional knowledge, safe pregnancy practices, and family planning methods. Illiterate women often have the least admittance to primary health care and emergency obstetric care. Most health care centers are located in urban area, which cannot be accessed by millions of rural women. On the contrary, illiterate women often experience discrimination and poorer quality care than more educated women. Illiterate women deliver without proper assistance of a skilled birth attendant and less than half deliveries take place in an institution.

ECONOMIC AND SOCIAL CONSEQUENCES

The consequences of poor education and women health have drastic economic and social implications. A mother is the center of her household and plays an important role for her family. Therefore, her education and health status is a major determinant of her children's upbringing and health. When she dies or is left disabled, her family struggles to survive. The United Nations Children's Fund reports that "infants whose mothers die within the first six weeks of their lives are more likely to die before reaching age two than infants whose mothers survive." This contributes to loss of productive years of upcoming generations, cycles of poverty, and economic losses to the country. Moreover, many obstetric complications due to poor hygiene and nutrition not only cause disability but also ostracize women from their families and communities.

The United Nation's Convention on the rights of the child (1988) and the Millennium Development Goals (2000) committed the international community of governments, international organizations, and nongovernmental organizations to work to provide education for all girls and boys and to eliminate gender disparities at both primary and secondary level. Between 1999 and 2005, 17 additional countries achieved gender parity in primary school attendance, bringing the total proportion that have done so to almost two-thirds (63%). At secondary level, 19 countries reached gender parity between 1999 and 2005. But only one out of every three countries (37%) has as many girls as boys at secondary schools. But wide differences remain between different regions and countries and even within countries. Girls still account for 60% of children out of school in Arab countries and 66% of nonattendees in South and West Asia. In contrast, more girls than boys attend schools in many countries in Latin America, the Caribbean, North America, and Western Europe.

DEMAND FOR MATERNAL HEALTH CARE

Maternal health services are dependent on the complex interdependent functioning of the entire health system.[32] The links between inputs, process, and outcomes are subject to multiple influences and confounding factors and each country's context determines many factors that influence the outcomes of maternal health and the performance of the service.[33]

The intermittent nature of demand, the difficulty in accessing quality maternal health services, and the wide range of powerful stakeholders with different priorities and agendas make the health system extremely complex.[34] In addition, international donors may influence the conditions of a country's health programs to satisfy their own agenda.[35]

Additionally, women need their capacity and capabilities strengthened so that they can take ownership of the decisions about their care at the right time and without having to rely or be expected to rely on others to make these decisions for them. Thus, a strong focus in attaining universal maternal health care access is to overcome demand-side barriers.

HEALTH EDUCATION STRATEGIES

Some of the strategies that can address the omission of girls in schools include changing the education policies that creates discrimination. This can be done by affirmative action and preferential policies in education, and removing the administrative rules that are considered as barriers. There should be enough efforts toward increasing school supply, establishing community schools, and setting up different choices to formal schooling. Schools should also promote health education on a variety of ways, focusing on biological, behavioral, and pedagogical concepts. Teachers and other health professionals must be prepared to address the complex social, developmental, and health-related issues that are detrimental to economic development of the country. Schools in relatively poor countries face the challenge of addressing the needs of students who may not be health illiterate and who have significant health needs. Continued effort should be made to maximize the learning of critical issues and concepts related to maternal and child health.

CONCLUSION

In the last few years, substantial progress has been made in girls' education; however, there are lots of issues to be addressed. Despite improvement in girl's basic education level, secondary school enrolment of both boys and girls is poor in most regions. Enrolling girls in higher education requires not just building and staffing more schools, but needs firm political, social, and financial will. Girls' education level improves the health status of the family, which ultimately leads the economic growth and social development goals.

There are a lot of economic and social obstructions when it comes to educating girls. Social exclusion bars certain caste and groups, denying them social rights that ideally should be provided to all citizens. These prejudice leads to poor parental willingness for schooling to girls. Families choose to educate boys over girls, as boys are considered for future employment prospects and the fact that girls in many societies are "married away," and no longer productive in their own families. Most of the developing and underdeveloped world's poor people live in rural areas. Also, transport and distance to school push the opportunity cost of school attendance and the security risk to girls' enrolment to school, and hence restricts school participation.

Education reduces girl's or woman's chances of risking their lives with diseases, which are related to nutritional deficiencies or pregnancy-related complications. Women who live in developing and developed countries and attended higher school were five times more likely to know the basic facts about HIV than uneducated women. Desired millennium development goals may not be achieved unless women are educated in their own communities and are strengthened to take decisions about their own health in a suitable and conducive environment. This can only be attained by community-based demand-side interventions for better education and maternal health. There is no doubt that qualified women influence the decision-making process within the family, supporting girls to enroll for higher education and taking suitable employment. Therefore, educated mothers are more likely than uneducated women to contribute toward healthy family and economic freedom to girls. Furthermore, education may change mothers' knowledge and perception of the importance of accessing and spending on family health. This will further suggest that educated mothers were more likely to contribute to strengthen the economic growth of the nation than uneducated mothers.

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REVIEW ARTICLE

Home Health Care: The Missing Link in Health Delivery System for Indian Elderly Population—A Narrative Review

Ankit Singh

ABSTRACT

Elderly population in India is at a disadvantageous position in comparison to other countries in matters of dedicated health facilities, health insurance, and geriatric specialist. Health issues of the elderly can be summarized as geriatric syndromes, cognitive decline, immobility, falls, and incontinence. These peculiar health characteristics of old age population can be better dealt with home health care, which is of recent origin in India and is limited to only metro cities in the private sector. Whereas home health care in the USA is present from over a century, in Europe it is present in most of the countries. This study presents the status of existing private home health care industry of India and advocates about the benefits of home health care for the elderly and supports that Indian policymaking bodies should incorporate home health care in its policy for improving access and quality of health care to elderly population.

Keywords: Aging, Home health care, Old age dependency ratio, Silver tsunami.

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INTRODUCTION

Every human has a right to health and it is the state's responsibility in India to take care of its citizen's health. Health care should be affordable, accessible, and reach all sections of society. To ensure that every country has its own customized health care system, it is divided into primary, secondary, and tertiary levels. However, it is also imperative for every country to reassess and redesign its health care system from time to time to cope with the challenges put forward by demographic and financial variables. Inadequate government provisions like social security scheme, health insurance, dedicated public health facilities for the old age population (above 60 years in India) made this section extremely vulnerable in terms of health and finance.[1] On the contrary, number of decreasing joint families[2] is also worsening the situation of old age people in India. In India elderly people (60 years and above) are deprived of measures which should have been taken long back by the Government of India to maintain their quality of life. As a result, India's elderly are facing problems of economic insecurity.[3] This situation becomes grave as with age health care expenditure also increases.[4] In addition to that, this scenario makes the situation of Indian elderly females much worse as they are comparatively highly dependent on family members than male counterparts; for example, as per the data by National Sample Survey organization, in 2004 only 15% of Indian rural females were economically independent, whereas for rural males this percentage was found to be 51%. However, these kinds of challenges in the past are being assessed and dealt with in developed countries on a proactive basis by measures, such as social insurance schemes, dedicated health facilities, and increased health insurance, as in many developed countries health care system is predominantly government-owned. In this context, Maples[5] used the phrase "Silver Tsunami" for the first time for the American aging population. He stressed upon the changing demographics and the challenges put forward by the aging population of America which was different from previous ones in terms of life expectancy, education, and lower rate of disability. Similar trends are also found in Indian aging population, which makes it imperative to learn lessons from other countries, which dealt with these problems successfully. This brings the question on how home health care can be of help for aging population? To answer this it has been well established that home health care played a vital role in Western countries in reducing the patient load in hospitals and health care professionals. For example, proper home health care is found to reduce rehospitalization, improve adherence to medication regimen, improve functional capacity, and bring cost of treatment down in patients with congestive heart failures.[6] Similarly in a study done in Korea, home health care is found to improve activities of daily living (ADLs) and instrumental ADLs of home health care recipients.[7]

In India, home health care market is growing at a fast rate with a Compound Annual Growth Rate of 18% and is expected to reach USD 6.2 billion by 2020.[8] But the year 2012 is highly significant in the Indian home health care industry when private organized home health player

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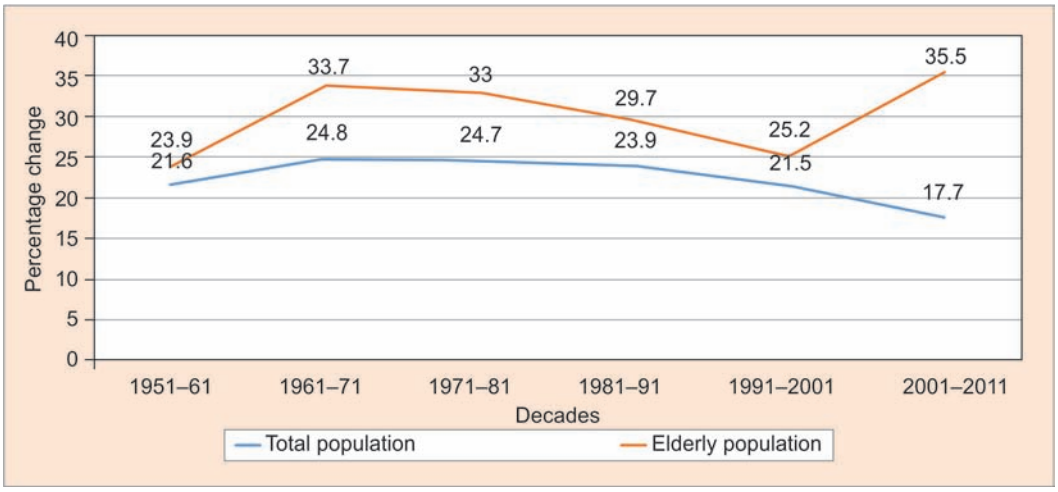


Graph 1: Decadal growth rate of general and elderly population
Source: Government of India, Ministry of Statistics and Programme Implementation, 2016

Portea Medical identified it as a viable business opportunity and started operation. It is at present the market leader of Indian home health industry. Many other private players started targeting Indian metro cities. However, in the public sector, the Ministry of Health and Family Welfare launched the National Programme for the Health Care of the Elderly (NPHCE) in the year 2011, which is still in its early years. This study is an attempt to highlight the challenges and problems faced by the elderly in India and also to suggest how home health care can fill the void of Indian health care system and minimize the health-related agony of elderly in India. This review is written after critically evaluating 47 research papers found in Google Scholar and ResearchGate with the keywords "home health care, home care, elderly abuse, elderly population trends in India, old age dependency ratio, Silver Tsunami, Ageing."

POPULATION TRENDS OF ELDERLY IN INDIA

In India, population is growing at a rate of 1.2% every year.[9] Out of the total population, 8.6% of population is above 60 years of age. Population aged 60 are higher in female subgroup (9%) in comparison to male subgroup (8.2%). It is also to be highlighted that the decadal growth rate of total population (Graph 1) is showing a declining trend, whereas the growth rate of elderly population in the decade 2001 to 2011 increased by 35.5%.[10]

In India, the old age dependency ratio is 14.2%. In this aspect, projection-based studies reveal that India is expected to have more than 19% of total population above 60 years by 2050.[11] Similarly, the dependency ratio* will rise up to 31% by 2050.**

As per the census data of India, it was found that in the last two decades the number of elderly females outnumbered the number of elderly males, which was reverse earlier (Graph 2). It should also be noted that this poses major risk to the elderly females as they are comparatively more dependent than the elderly male counterparts. Old age dependency ratio for female in 2011 was 14.5 in comparison to male 13.6[10] (Graph 3).

Meaning of Silver Tsunami

Silver means "Silver-lined hairs old people" and tsunami means something which is coming in a massive way and hard to cope with. Maples[5] coined the word "Silver Tsunami" in the context of American baby-boomer generation which began to celebrate their 60th birthday by the year 2006. This generation is different from previous other generations in terms of education, family structure, life expectancy, and lower rates of disability.[12]

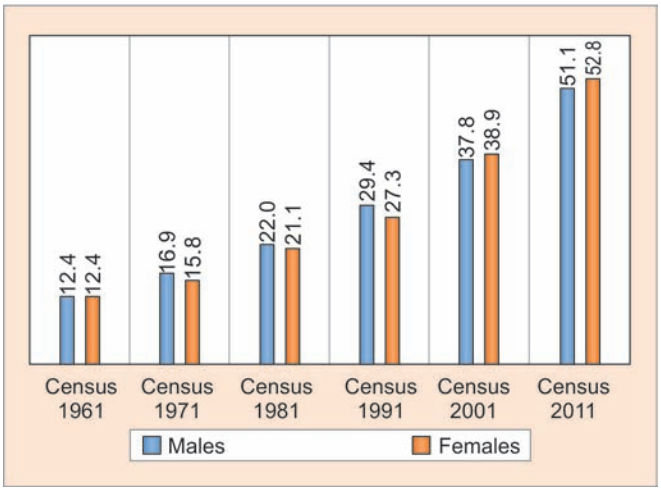
HEALTH ISSUES OF ELDERLY

At least one in every seven older adult (14%) has at least one of the functional limitations, and functional limitation was found to be higher in older adult females in comparison to males.[13] Similarly, the proportion of elderly mobile men fell from 95 to 72% in age group 60 to 64 years to above 80 years, whereas in females it fell from 95 to 63–65% from age group 60 to 64 years to above 80 years[14] (Graph 4).

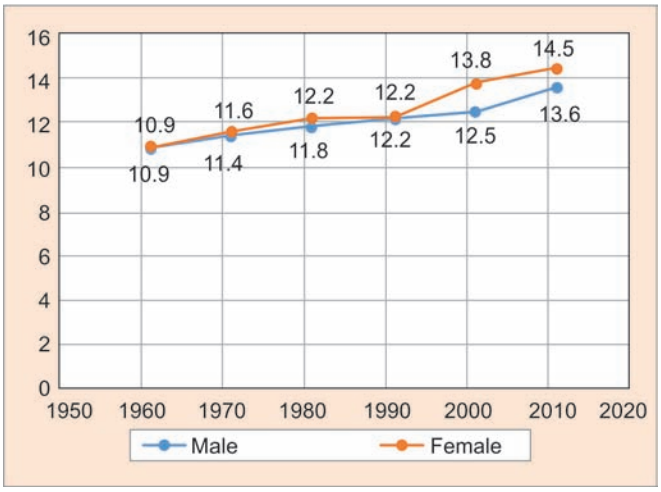
It is also to be noted that prevalence of heart disease is more in urban elderly population than rural elderly population, whereas prevalence of ulcer is higher in rural elderly population. The prevalence of diabetes is more in urban males in comparison to rural males, whereas the same is opposite in the case of females[10] (Graph 5).

*Number of dependent people per working age population.

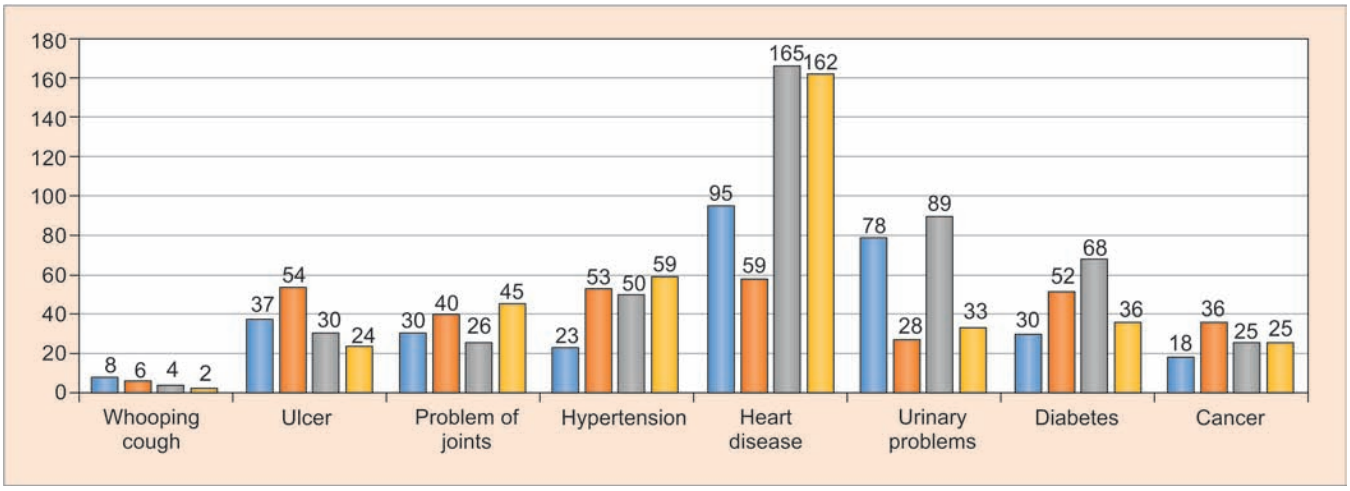
**National Research Council. Ageing in Asia: findings from new and emerging data initiatives. Washington (DC): National Research Council; 2012. Available from: https://www.nap.edu/catalog/13361/aging-in-asia-findings-from-new-and-emerging-data-initiatives.



Graph 2: Gender-wise distribution of elderly population of India (data in millions)
Source: Government of India, Ministry of Statistics and Programme Implementation, 2016



Graph 3: Old age dependency ratio by gender in India, 1961 to 2011
Source: Government of India, Ministry of Statistics and Programme Implementation, 2016



Graph 4: Number of elderly person reporting chronic disease (per 1,000 persons)
Source: National Sample Survey, 2004

Talking about the chronic disease profile of elderly in India, the big four are heart disease (31%), urinary problems (15%), hypertension, and diabetes (12% each).

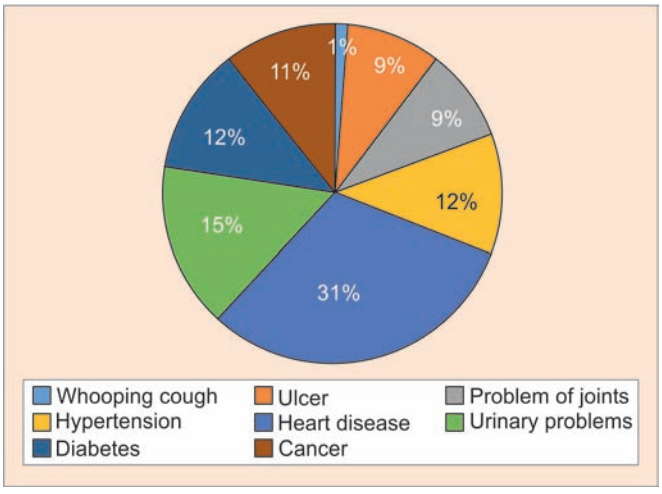
The implication of Silver Tsunami on health care will be increased utilization of health care services and resources by old age people, increased overall cost of health care, and shortage of health care professionals. Old age is also characterized by mental illnesses, such as dementia, and in dementia Alzheimer's disease is highly prevalent in old age people. For example, in Canada two-thirds of elderly with dementia above 65 years are suffering from Alzheimer's disease.[15] Similarly, in a study done in the USA, it was found that despite the efforts by the government to promote geriatric care, enrolment in geriatrics training program across different profession is not increasing and health professional graduates are lacking formal training in care of older adults.[16]

The condition is worse in India as the geriatric care in India is in its nascent stage. There are very few geriatric care professionals in India and in a country of 1.3 billion people only one seat is for DM Geriatric mental health and 22 medical seats are for MD Geriatrics annually.[†] The patients of elderly age group are treated majorly by internal medicine experts in India but the health needs of an elderly are peculiar and require specialized attention, which should be provided only by a specialist in geriatrics.

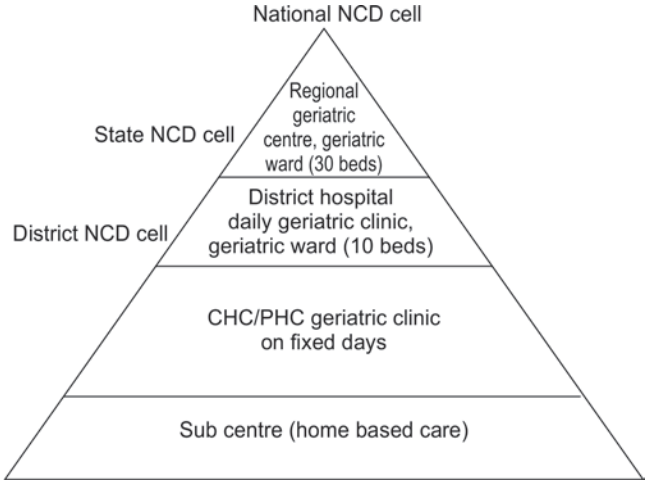
HOME HEALTH CARE AND AGING

In India, there is shortage of health care professionals as the total numbers of allopathic doctors, nurses, and midwifes are 11.9 per 10,000 population, which is half of World Health Organization benchmark of 25.4 workers per 10,000 population.[17] In addition to that, in the Indian health care workforce of allopathic doctors, there is underrepresentation of women as females are only 17% of

[†]http://www.mciindia.org/.



Graph 5: Chronic disease profile of elderly in India
Source: National Sample Survey, 2004



Graph 6: National program for health care of elderly levels of care
Source: Operational guidelines: National programme for healthcare of the elderly (NPHCE), p. 5

all allopathic doctors. However, this underrepresentation of women in health care can affect the access to health care of elderly females as well. Authors have advocated for an integrated home care-based approach for geriatric patients. In their study they found this approach resulted in reduced hospitalization and decreased cost of treatment.[18] Home health care can also be a solution for the shortage of manpower as it focuses on preventive aspect of care and it provides a new set of health care professionals who can assist physicians in care delivery at home.[19] Moreover, surveys of older adults indicate that they have a strong desire to remain in the community as long as possible.[‡]

Studies have shown that elders living alone are at high risk of health.[20,21] Complementary to this, various studies have supported the fact that multigenerational household contributes to health gains as it provides benefits, such as family support, active grand parenting roles, healthier lifestyle, e.g., giving up smoking for grandchildren's, and assistance in day-to-day activities.[22]

ELDERLY AS MAJOR USERS OF HOME HEALTH CARE

In a study done in Sweden, it was found that women are comparatively more heavy users of home health services and the consumption of home health services increases with age.[23] Both these trends are present in Indian demography as the life expectancy in India for women increased more in comparison to men for the period 1990 to 2003[¶] and reasons for this shift cited are low level of mortality, fertility, and high life expectancy.[24]

India's aging population is a significant contributor for making India a lucrative market for home health care service providers. Majority of home health service providers in India have elderly care in their service offering list, however, the service type, service pricing, service packaging vary from organization to organization, and the organization are still trying to come up with the best fit for the Indian market.

HOME HEALTH CARE IN INDIA

India came up with the National policy for older persons in 1999, with the aim of assisting older people to live an independent life. In 2007, it became a matter of sate obligation under "Maintenance and Welfare of Parents and Senior Citizens Act, 2007." To address the health needs of older citizens of India, in 2011, the Ministry of Health and Family Welfare launched NPHCE. The interventions designed were in preventive, curative, and rehabilitative domains of the geriatric field[§] (Graph 6).

In NPHCE, it is acknowledged that India lacks the model, such as home-based care and insurance for elderly people to cater to the needs of elderly people; for example, in India the insurance schemes for poor cover only those aged 65 years or younger.[#] In NPHCE, as per the operational guidelines, domiciliary visits for

[‡]National Council on Aging. The United States of Aging Survey. Arlington (VA): National Council on Aging; 2015 [cited 2015 Dec 7]. Available from: https://www.ncoa.org/news/usoa-survey/.

[¶]Global burden disease study. Lancet 2013.

[§]National programme for health care of the elderly, Ministry of Health and Family Welfare, Government of India, 2011.

[#]Ageing in Asia: findings from new and emerging data initiatives. 2012.

home-bound patients at the subcenter level are incorporated, which supports the view that home health care is now considered as a measure to improve the condition of elderly people even by government agencies in India.

On the contrary, at the time of independence, only 8% of Indian health care delivery was private and now Indian health care system is dominated by private players and around 87% of India's health care is privately funded.[25] This phenomenon is also seen in home health care segment of Indian health care system as it is now considered as an attractive venture for investors, and more and more players are entering with the passage of time.

KEY PRIVATE PLAYERS OF INDIAN HOME HEALTH CARE INDUSTRY

Nightingales, the home health specialist, claims itself of having 18 years of experience in home health care, although in the early years the home health service provided by them was unorganized and was limited to supply of qualified nurses, but in 2014 at the time of acquisition by Medwell Ventures, it was providing 53,000 bedside nursing days per annum, 24,000 medical services per year, and 5,000 families were subscribed under its annual care plan. In the initial phase, majority of organizations were tapping metros and tier 1 cities based on the data collected from individual organizational websites. More number of home health care organizations are in southern part of India, basically clustered around Bengaluru, Chennai, and Hyderabad, such as India Home Health care, Portea Medical, Nightingales, Apnacare, Health Heal, etc. In India, home health care started its operations in 2009, whereas the current market leader based on presence is Portea Medical, with 25 branches all over India. It started its operations in the year 2013. The year 2013 was very significant in the home health care industry in India as in this year US-based Bayada Home Health care bought 26% stake in Chennai-based India Home Health Care[$] and after that various other organizations got funding. To name a few, Portea Medical raised 8 million dollars from Accel Partners and VentureEast (Table 1), Medwel Ventures purchased Nightingales for undisclosed amount in 2014, Homital Medcare started operations with seed funding from RR energy.

Similarly in the year 2016, strategic acquisitions were done by the key players like Portea Medical which acquired Health Mantra to strengthen their records management system and PSTakeCare to gain the access for proven platform for connecting stakeholders like Super specialists and specialists with the patients (Table 2).

Now home health care is spreading to other parts of the country also, like Mumbai with the increased presence of home health service providers, such as Zoctr, Arooj Home Health care, Portea, India Home Health care, Nightingales, and Care 24, whereas in Kolkata Tribeca Care and Portea are the major players. In NCR-Delhi, Health care at Home, Pramati Care are increasing their footprints.

Table 1: Recent investments in home health care segment

Name of organization and year	*Location*	*Investor*	*Amount (in million $)*
Pramati Care (2016)	Noida	Marquee Angel Investors	0.20
Care24 (2016)	Mumbai	India Quotient, SAIF Partners	4.35
Portea (2015)	Bengaluru	Accel Partners, VentureEast, Qualcomm Ventures	37.5
Life Care Health (2016)	Hyderabad	SOS	0.15
MyCareLine (2016)	Delhi	Angel Investment	0.5

CONCLUSION

The growth in numbers of private home health service providers and the increased preference of home health services by Indian elderly population in last decade clearly indicate the missing market of home health services for Indian elderly population, which is still absent in the public sector. Access to these services will be a critical issue as high cost serves as a significant hindrance and pushes home health care market toward market failure.

Table 2: Recent acquisitions in home health care industry

Month and year	*Target firm*	*Acquirer*	*Rationale*
Jul-16	Health Impetus	Health care at Home India	Disease management firm
Mar-16	Health Mantra	Portea Medical	To strengthen financing services and records management services
Jan-16	PSTakeCare	Portea Medical	To get access to a proven platform for connecting stakeholders of health care ecosystem
Nov-15	MedibyzPharma	Portea Medical	To provide pharmacy services to chronic disease patients

[$]Reuters. Feb 2014. http://blogs.reuters.com/india/2014/02/05/health-start-ups-tap-indias-growing-home-care-sector/.

Indian policymaking bodies should identify this gap and should come up with a policy on home health care which stresses on development of infrastructure for home health services. Indian policymaking bodies should also devise an insurance scheme that will increase the access of Indian elderly for the home health services.

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