*Original Article*

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# Dr.W.Edward Deming Priniciples Applied for a Healthcare: Patient Satisfaction Study and Quality in a Tertiary Care Teaching Hospital

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**Abstract**

The quality rendering hospitals means services are safe, effective and patient centered. According to WHO any quality concerned means Health services should be timely, equitable, integrated and efficient. Hospital recognizes process management accessible, acceptable, and continuous from patients point of view. Patients are the empowered decision makers for any quality process and principles laid by the total quality management gurus. Quality care is interdependent on processes of structural inputs, infrastructural safety measures, Hospital operations process and measurement, Evidence based patient care, Patient care services judged by the patient, Cost effectiveness, Minimum usage of resources. Dr. Deming, Juran, Ishiwaka, and other scientists of total quality management realistic basic contributions in the industries afterwards applied and practiced science in healthcare since the years begun of 1980. Quality Improvement is a continuous process in a health care.

The five basic Deming Principles out of fourteen are:

- The quality improvement is the science and the management.
- For a quality control in a healthcare, if you cannot measure it –you cannot improve it.
- Managed care means managing the process of care, not managing physicians and nurses.
- The right data in the right format, at the right time, in the right hands.
- Engaging the smart cogs of the health care.

*Materials and Methods*: The study was conducted in a tertiary care teaching Hospital, it's a Descriptive study. The patient population in an Outpatients department, Inpatients department, and Health insurance patients were selected as a sample, Qualitative and Quantitative analysis analyzed for the primary data collected.

*Result*: Patient satisfaction study and Quality management applied science in a tertiary care teaching hospital resulted as "Good" but the errors found in a study will be taken care to reach for "Best" as quality improvement is a continuous process in a health care.

**Key words:** Quality; Health care; Process management; Quality improvement.

***Abbreviations:*** TTH-Tertiary care Teaching Hospital, HSK-Hangal shri Kumareshwar Hospital and research Centre.

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## Introduction

Total quality management is the art of managing the whole to achieve excellence. Total-Made up of whole. Quality-Degree of excellence a product or service provides. Management-Act, art or manner of controlling directing follows.

Total quality management is defined as both a philosophy and a set of guiding principles that represent the foundation of continuously improving organization. The organization will not be into the transformation until it is aware that the quality of a product or service must be improved. Quality can be quantified as follows Q=P/E, Q=Quality, P=Performance=expectations.

Total quality management in the healthcare is providing the environment best possible care through continuous improving of the services to meet the expectations of the patient / customer.

The improved way to healthcare system and procedures to achieve an optimum outcome pertains to best quality services, patient satisfaction and better performance.

According to Dr Edward Deming quality of healthcare is "a strategy aimed at the needs of patient/customer for present and future. According to Philip Crosby Conformance to requirements. Totally features and characters of hospital services that bear on its ability to satisfy stated and implied needs of its patients.

### *Total quality management basic concepts*

- A committed and involved management to provide long-term top to bottom organizational support.
- An unwavering focuses on the customer, both internally and externally.
- Effective involvement and utilization of the entire workforce.
- Continuous improvement of the business and production process.
- Treating suppliers as partners.
- Establish performance measures for the process.

## Review of Literature

### *Total quality management*

- 1924 W.A. Shewhart of Bell Telephone Labs developed a statistical chart for the control of product variables.
- 1946 American society for quality control confirmed.
- 1950 W.Edward Deming,Who learned statistical quality control system from shewhart .
- 1954 Juran emphasized management's responsibility to achieve quality.

### *Quality and Healthcare*

19th century the roof of quality assurance initiatives in healthcare Florence nightingale as far back.

- 1913-American College of surgeons was founded great variations in the quality of healthcare.
- 1917 and 1930 the ACS developed the Hospital standardization process.
- 1992 ASQ developed the role of improving the healthcare
- 1997 QCI establish an autonomous body NABH National Accreditation Board for Hospitals and Health care providers.

### *Aim*

To study Total quality management science applied for a healthcare.

### *Objetives*

To study Dr.Edward Deming Principles applied for Healthcare.

To study Patient satisfaction and quality in a tertiary care teaching hospital based upon Dr.Edward Deming priniciples.

### *Research methodology*

A Descriptive study has taken in a tertiary care teaching hospital S.N.Medical College , HSK Hospital and Research centre Bagalkot. A time period of one year seven months meant for primary data collection in OPD,(first visit revisit patients), IPD (patients on discharge process), Health Insurance (second time patients at the time of admission first time patients at the time of Discharge Process) structured questionnaire distributed among study population of stratified random sampling in OPD and IPD, Stratified purposive sampling in Health insurance.

Qualitative and quantitative both methods applied for collected data analysis Cronbach's alfa, Chi-square t- test, median values, and Wilcoxon signed rank statistical tools implication for the results. Analysis results are obtained by SPSS software.

### *The quality improvement is the science and management*

When Deming and others developed their approach to modern quality improvement starting about 75 years ago, they have basically been developing a way for modern organizations to deal with the complex challenges that were confronting them. The approach they developed

for improvement was remarkably simple, yet extraordinarily powerful. It's centered on the fact that quality improvement is about process management.

Health care is a complex but it is not basically far-away from other industries. Healthcare consists of many interlinked processes that result in a complex system process of a care one at a time probably including other principles of quality also service organization 80 percent impact will be resulted but 20 percent at most attention to begin with the process flow in quality process management for improvement.

***For a quality control in a healthcare, if you cannot measure it –you cannot improve it***

Deming clearly understood the importance of data. Meaningful quality improvement must be data-driven. A hospital patient satisfaction survey can be an important tool in understanding and identifying ways to reduce costs and improve operations performance. By capturing the patient perspective across the entire care continuum, a patient satisfaction survey provides a clear picture of where the process is failing to meet patient needs and expectations. A hospital patient satisfaction survey can accurately recognize areas of concern problems in communication or perceived lack of compassion, and help organizations identify the areas where specific changes could yield best results.

**Results**

Qualitative and quantitative analysis both the tests yields same results for "good nursing" services and the error found for the service is to be taken care according to quality care standards according to Sir Deming Principle unless and until we measure we will not get results and results concludes quality improvement is a continuous process and it is possible to measure service quality in healthcare.

***Qualitative Analysis***

*1. When the nurse visits to you in the ward / room?*

Only to give medicine, As and when called, Comes frequently on her own, Never comes even though the calls are there.

Excellent, Good, Average, Poor

Analysis Results and Inference: The 47% of the patients are satisfied with this service of nurses. 39% of the patients are very much satisfied that nurses without any instructions comes to their own to attend patients in the ward. 10% patients expect that nurse should come and attend patients then and there not to give only medicines but give medical assistance care.

Chi squared P- value 0.115 signifies there is no association between patients and nurse in different departments for this service irrespective of department nurse are rendering this service in TTH, HSK.

*2. How are the medicines given to you?*

Always by the nurse, Most of the time by the attenders, Sometimes by the nurse,

On our own.

Excellent, Good, Average, Poor

Analysis Results and Inference: This question asked to the patients when patients are hospitalized, it's a duty of nurse to give medicines on time beside the bed of a patient.45% of the patients are satisfied and they are happy that nurses always come towards bed side to give medicines to patients and 28% patients are happy for this service, 7% of the average suggests patient expects this service should be given by the nurse.

The 16% patients opine this satisfaction for the service and without any instructions they took medicines on their own.

Chi squared P- value 0.072 suggests that there is no association between the nursing service and this service. It's the duty of the nurse to go towards bedside of the patient and give medicines according to doctor's prescription.

*3. Were you made comfortable by nursing staff.....*

Excellent, Good, Average, Poor

Analysis Results and Inference: When a patient is admitted in the ward they are dependent on nursing staff and patients expects comfortable service from nurse to patients.

81% of the patients are satisfied with this service, 14% of the patients for average option suggests nursing students should behave comfortably with patients.

Chi-squared P-value 0.367 suggests there is no association between this service and different departments. Because most of the time nurse are the one who takes care of patients.

*4. Did the nursing staff give prompt attention to your needs and request?*

Excellent, Good, Average, Poor

Analysis Results and Inference: The 77% of the patients are satisfied with this service, 17% of the patient's opine of average suggests whenever patients call the nurse should pay attention and listen to patients and their accompanies carefully.

Chi squared P- value 0.281 suggests there is no association between this service and different IPD departments without any compromise in any department.

*5. Did the nursing staff explain hospital routine procedures adequately?*

Excellent, Good, Average, Poor Analysis results and Inference: This question is asked to the patients whether nursing staff are explained to the patients and their accompanies standard processes followed by a hospital example, doctor rounds, visitor timing, dressing timing, insurance support etc.

The 59% of the patients are satisfied with this service, 21% patients opted for average for this service and suggest improvement in this service because the patients who are getting admitted in TTH, HSK may not know hospital processes to follow up.

Chi squared P -value 0.059 suggests there is no association between service and different departments to this service. It's the duty of every nurse to explain every patient's standard process and instructions to be followed up.

*6. Were you taught how to care for yourself after leaving the hospital?*

Excellent, Good, Average, Poor

Inference and results: The 74% of the patients are happy with this service, that nurse explains them satisfactorily that when a patient gets discharged, they should know how to take care of themselves in the home.

Chi squared P=0.046 values suggests there is an association between this service and different departments. Patients in pediatrics, orthopedics and surgery department's patients are not happy and they expect nurse should explain properly to take care of themselves when patients reach home. After getting discharged from hospital. Whereas patients in the medicine ENT, ophthalmology, orthopedic are satisfied with this service.

***Quantitative Analysis and Hypothesis Test Summary Results and Inferences***

[Quantitative analysis calculated for operational process in the inpatient department for patient department HSK, SNMC by non parametric test Kruskal Wallis values and median score rankings.

***Nursing service process***

1. Ranking distribution commented as below mentioned

| Excellent | Good | Average | Poor |
|---|---|---|---|
| Very much satisfied | Satisfied | Improvement necessary for satisfaction | Dissatisfied |
| 1 | 2 | 3 | 4 |

Inference and results: Errors occurred in the nursing service process in IPD median rank

For nurse availability to patients in wards for medicine intake. Visit patients on their own often to the patients, explaining policy and procedures of the hospital to patients.

3. Managed care means managing the process of care, not managing physicians and nurses.

The important application or clarification of a Deming principle was further carried by, Brent James. Managing care means managing the processes of care. It does not mean managing physicians and nurses. In the 90's with the "managed care" movement it was interrupted that managing care meant telling physicians and nurses what to do. The basic necessary is to correct and improve the process by empowering clinicians and patients for process improvement need.

Process flow involvement is not only for the clinicians it's the patients who are involved in the process to score for the satisfaction patient satisfaction is the scale yard of the process hospital operations any deviations in the process has to be improved by the patients in the process of research methodology (open end or the close end questionnaire are used as a patient options for the perceptions of the patients) and open end questionnaire is involved in this study support a structured questionnaire is framed according to the process flow of the operations of a tertiary care teaching hospital and tested for reliability. Cronbach's alpha: Cronbach's alpha is a name used for tau-equivalent reliability as an estimate of the reliability of a psychometric test. Synonymous terms are: coefficient alpha, Guttmann lambda 3.

Nursing Services operation process

| In Patient Department | | When the nurse visit you in the ward/ room? | How are the medicines given to you? | Were you made comfortable by nursing staff..... | Did the nursing staff give prompt attention to your needs and request? | Did the nursing staff explain hospital routine adequately? | Were you taught how to care for yourself after leaving thehospital? |
|---|---|---|---|---|---|---|---|
| Medicine | Mean | 1.8372 | 1.6047 | 1.5116 | 1.5581 | 1.9070 | 1.6977 |
| | N | 43 | 43 | 43 | 43 | 43 | 43 |
| | Std. Deviation | .89789 | .97930 | .82728 | .88108 | 1.10871 | 1.03590 |
| | Median | 2.0000 | 1.0000 | 1.0000 | 1.0000 | 2.0000 | 1.0000 |
| Surgery | Mean | 1.7872 | 1.9574 | 1.7447 | 1.7660 | 2.0426 | 1.7447 |
| | N | 47 | 47 | 47 | 47 | 47 | 47 |
| | Std. Deviation | .97660 | 1.17875 | .73627 | .91397 | .99907 | 1.11254 |
| | Median | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 |
| OBG | Mean | 1.6400 | 1.8200 | 1.6800 | 1.7400 | 1.8800 | 1.8400 |
| | N | 50 | 50 | 50 | 50 | 50 | 50 |
| | Std. Deviation | .56279 | 1.06311 | .76772 | .82833 | .84853 | .81716 |
| | Median | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 |
| PAED | Mean | 1.6596 | 2.0851 | 1.8936 | 1.9787 | 2.0426 | 2.0638 |
| | N | 47 | 47 | 47 | 47 | 47 | 47 |
| | Std. Deviation | .59988 | 1.05973 | .75855 | .79371 | .77900 | .89453 |
| | Median | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 |
| Orthopedic | Mean | 1.8286 | 1.8857 | 1.8286 | 1.9714 | 2.2571 | 2.0286 |
| | N | 35 | 35 | 35 | 35 | 35 | 35 |
| | Std. Deviation | .82197 | 1.20712 | .74698 | .66358 | 1.03875 | .85700 |
| | Median | 2.0000 | 1.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 |
| ENT | Mean | 1.6500 | 1.8000 | 1.7000 | 1.6000 | 2.2500 | 1.8000 |
| | N | 20 | 20 | 20 | 20 | 20 | 20 |
| | Std. Deviation | .67082 | 1.23969 | .80131 | .68056 | 1.11803 | .83351 |
| | Median | 2.0000 | 1.0000 | 1.5000 | 1.5000 | 2.0000 | 2.0000 |
| Ophthalmology | Mean | 1.6000 | 2.6400 | 1.9600 | 2.0000 | 2.2800 | 1.9600 |
| | N | 25 | 25 | 25 | 25 | 25 | 25 |
| | Std. Deviation | .76376 | 1.43991 | .84063 | .86603 | 1.02144 | .78951 |
| | Median | 1.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 |
| Total | Mean | 1.7228 | 1.9401 | 1.7491 | 1.8015 | 2.0562 | 1.8727 |
| | N | 267 | 267 | 267 | 267 | 267 | 267 |
| | Std. Deviation | .76946 | 1.16180 | .78085 | .82826 | .97363 | .92921 |
| | Median | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 |

The result Croanbach's alfa found OPD(0.935) IPD (0.829) the structured questionnaire operations of the hospital and patient participation begun from the patient entry Registration to outpatient department to the discharge of a patient and exit of the hospital thus it's managed care is the process involvement deviations are improved by the clinicians and healthcare staff for the service quality improvement in a hospital.

Inference and results: Errors occurred in the nursing service process in IPD median rank – 2 for nurse availability to patients in wards for medicine intake .Visit patients on their own often to the patients, explaining policy and procedures of the hospital to patients.

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Process flow involvement is not only for the clinicians it's the patients who are involved in the process to score for the satisfaction patient satisfaction is the scale yard of the process hospital operations any deviations in the process has to be improved by the patients in the process of research methodology (open end or the close end questionnaire are used as a patient options for the perceptions of the patients) and open end questionnaire is involved in this study support a structured questionnaire is framed according to the process flow of the operations of a tertiary care teaching hospital and tested for reliability. Cronbach's alpha: Cronbach's alpha is a name used for tau-equivalent reliability as an estimate of the reliability of a psychometric test. Synonymous terms are: coefficient alpha, Guttmann lambda 3.

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4. The Right Data in the Right Format at the Right Time in the Right Hands

Once the process is managed than the data has to be handled, processed and results have to be given at the right format, right time, and to the right place. The process is in the data format and to be delivered into the right hand.

The data collected in the study was primary data in the Outpatient department, Inpatient department and for the Health insurance patients.

**Result**

The primary data collected is analyzed for the quality services of the qualitative and quantitative research methods patients satisfaction was found to be satisfied but attention for the deviations for quality services will be on continuous observation for quality improvement as a continuous process present collected primary data as a secondary data and for the improvement again primary data will be collected.The quality services in the OPD of a hospital primary data collected and the qualitative analysis is shown as a example.

***Qualitative analysis: Quality services***

Chi-Square Tests

1) Total opine about safety for patients

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 30.012 | 24 | .184 |
| Likelihood Ratio | 38.519 | 24 | .031 |
| Linear-by-Linear Association | 4.551 | 1 | .033 |
| N of Valid Cases | 100 | | |

2) Total courtesy and convenience

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 28.172 | 24 | .253 |
| Likelihood Ratio | 32.474 | 24 | .116 |
| Linear-by-Linear Association | 4.172 | 1 | .041 |
| N of Valid Cases | 100 | | |

3) Waiting time

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 39.332 | 24 | .025 |
| Likelihood Ratio | 36.183 | 24 | .053 |
| Linear-by-Linear Association | 2.325 | 1 | .127 |
| N of Valid Cases | 100 | | |

4) Queue system

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 31.361 | 24 | .144 |
| Likelihood Ratio | 31.065 | 24 | .152 |
| Linear-by-Linear Association | 3.001 | 1 | .083 |
| N of Valid Cases | 100 | | |

5) Registration

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 38.437[a] | 24 | .287 |
| Likelihood Ratio | 38.878 | 24 | .139 |
| Linear-by-Linear Association | 1.395 | 1 | .410 |
| N of Valid Cases | 100 | | |

6) Department OPD

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 27.390[a] | 24 | .287 |
| Likelihood Ratio | 31.532 | 24 | .139 |
| Linear-by-Linear Association | .678 | 1 | .410 |
| N of Valid Cases | 100 | | |

7) Lab

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 50.032[a] | 24 | .001 |
| Likelihood Ratio | 48.775 | 24 | .002 |
| Linear-by-Linear Association | 5.065 | 1 | .024 |
| N of Valid Cases | 100 | | |

8) Radiology

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 30.909[a] | 24 | .156 |
| Likelihood Ratio | 37.675 | 24 | .037 |
| Linear-by-Linear Association | 1.432 | 1 | .231 |
| N of Valid Cases | 100 | | |

9) Reporting

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 39.515[a] | 24 | .024 |
| Likelihood Ratio | 46.274 | 24 | .004 |
| Linear-by-Linear Association | 4.339 | 1 | .037 |
| N of Valid Cases | 100 | | |

10) Pharmacy

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 42.438 | 24 | .012 |
| Likelihood Ratio | 47.991 | 24 | .003 |
| Linear-by-Linear Association | .795 | 1 | .373 |
| N of Valid Cases | 100 | | |

11) Billing

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 31.532 | 24 | .139 |
| Likelihood Ratio | 36.125 | 24 | .053 |
| Linear-by-Linear Association | 1.916 | 1 | .166 |
| N of Valid Cases | 100 | | |

12) Security

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 45.836 | 24 | .005 |
| Likelihood Ratio | 50.048 | 24 | .001 |
| Linear-by-Linear Association | 2.232 | 1 | .135 |
| N of Valid Cases | 100 | | |

13) Housekeeping

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 34.028 | 24 | .084 |
| Likelihood Ratio | 38.578 | 24 | .030 |
| Linear-by-Linear Association | 1.206 | 1 | .272 |
| N of Valid Cases | 100 | | |

14) Vehicle

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 39.254 | 24 | .026 |
| Likelihood Ratio | 43.725 | 24 | .008 |
| Linear-by-Linear Association | .187 | 1 | .665 |
| N of Valid Cases | 100 | | |

15) Telephone

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 35.826 | 24 | .057 |
| Likelihood Ratio | 38.619 | 24 | .030 |
| Linear-by-Linear Association | 3.227 | 1 | .072 |
| N of Valid Cases | 100 | | |

16) Volunteers

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 35.395 | 24 | .063 |
| Likelihood Ratio | 40.998 | 24 | .017 |
| Linear-by-Linear Association | .078 | 1 | .780 |
| N of Valid Cases | 100 | | |

17) Working hour's OPD

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 39.822 | 24 | .022 |
| Likelihood Ratio | 39.556 | 24 | .024 |
| Linear-by-Linear Association | .016 | 1 | .900 |
| N of Valid Cases | 100 | | |

**Results and Inference:** The chi–square p-values (0.05 significant level) for each quality service measures of variables distributed among medicine, surgery, orthopedic, dermaltogy, opthalmology, OBG, ENT. Patients are satisfied but p-values Curtesy 0.184 queue system 0.253, Department OPD 0.287, Radiology 0.156, Billing 0.139, does not have any association of significance with the variables and Departments where as chi-square p-values (0.05 significant level) Waiting time 0.025, Registration 0.031, Lab 0.001 and Reports 0.024, Pharmacy 0.012, Security 0.005, House keeping 0.084, Vehicle 0.026, Telephone 0.057, Voulenteers 0.063, Working hours 0.022 has an significant association with all the departments mentioned: Indicates that quality services need to be improve among all departments mentioned. Quality of the patient services needs to be improve in OPD, TTH.

**Quantitative Values Quality Services: 19**. Quality service in Department OPD. – a) Total opine about safety for patients. b) Total courtesy and convenience c) Waiting time d) Queue system e) Registration f) Department OPD g) Lab h) Radiology i) Reporting j) Pharmacy k) Billing l) Security m) Housekeeping n) Vehicle o) Telephone p) Volunteers q) Working hour's of OPD.

| Excellent | Good | Average | Poor |
|---|---|---|---|
| Very much satisfied | Satisfied | Improvement necessary for satisfaction | Dissatisfied |
| 4 | 3 | 2 | 1 |

| OPD Quantitative values, quality Services | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| | | Bill | Secure | House Keeping | Vehicle | Telephone | Volunteers | Working Hours |
| Medicine | Mean | 2.5333 | 2.5667 | 2.7000 | 2.8333 | 2.4667 | 2.8333 | 2.1667 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Std. Deviation | .81931 | .62606 | .70221 | .59209 | .86037 | .64772 | .59209 |
| | Median | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 2.0000 |
| Surgery | Mean | 2.4286 | 2.2857 | 2.1429 | 2.2143 | 2.2857 | 2.3571 | 1.9286 |
| | N | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| | Std. Deviation | 1.15787 | 1.20439 | 1.16732 | 1.25137 | 1.13873 | 1.15073 | .99725 |
| | Median | 3.0000 | 2.0000 | 2.0000 | 2.0000 | 2.0000 | 2.5000 | 2.0000 |
| Dermatology | Mean | 3.1250 | 2.8750 | 2.2500 | 2.7500 | 2.7500 | 2.7500 | 2.2500 |
| | N | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Std. Deviation | .35355 | .64087 | 1.03510 | .70711 | .88641 | .70711 | .88641 |
| | Median | 3.0000 | 3.0000 | 2.5000 | 3.0000 | 3.0000 | 3.0000 | 2.5000 |
| Ophthalmology | Mean | 2.5294 | 2.5294 | 2.5294 | 2.5294 | 2.5294 | 2.5294 | 2.4706 |
| | N | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| | Std. Deviation | 1.06757 | 1.06757 | 1.06757 | 1.06757 | 1.06757 | 1.06757 | .79982 |
| | Median | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 |
| Orthopedics | Mean | 2.8182 | 2.8182 | 2.8182 | 2.8182 | 2.8182 | 2.8182 | 2.3636 |
| | N | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| | Std. Deviation | .60302 | .60302 | .60302 | .60302 | .60302 | .60302 | .80904 |
| | Median | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 2.0000 |

| OPD Quantitative values, quality Services | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| | | Bill | Secure | House Keeping | Vehicle | Telephone | Volunteers | Working Hours |
| OBG | Mean | 2.9375 | 2.9375 | 2.9375 | 2.9375 | 2.9375 | 2.9375 | 2.0000 |
| | N | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| | Std. Deviation | .25000 | .25000 | .25000 | .25000 | .25000 | .25000 | .36515 |
| | Median | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 2.0000 |
| ENT | Mean | 2.5000 | 2.5000 | 2.5000 | 2.5000 | 2.5000 | 2.5000 | 2.0000 |
| | N | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | Std. Deviation | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | .00000 |
| | Median | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 2.0000 |
| Total | Mean | 2.6600 | 2.6300 | 2.6000 | 2.6900 | 2.5900 | 2.7100 | 2.1800 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Std. Deviation | .83145 | .79968 | .85280 | .81271 | .86568 | .79512 | .71605 |
| | Median | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 2.0000 |

5. Engaging the "smart cogs" of healthcare:

If quality improvement is going to work in healthcare, if we are going to realize value, it means to engage clinicians. To use Deming's term, clinicians are health care so-called "smart cogs." They are the Frontline workers who understand the processes of care and as it said in an earlier, we are very fortunate in healthcare because we have a workforce dominated by clinicians who are extraordinarily committed, thus intelligent, and highly educated. Thus the involvement of doctors is encouraged both in the OPD and IPD. Here by The OPD quality services analysis is shown as a example.

**Results:** The patients never hesitated to give their opinions for the questions meant for doctors and for the deviated errors doctors respected patients opinion.

**Doctor Services**

***Doctor Service in OPD***

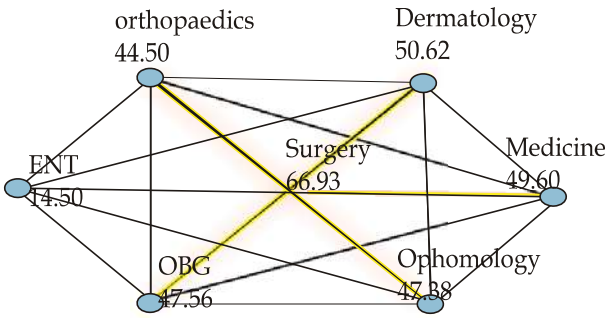
a) The doctor did the Examination with respect.
b) The doctor spent enough time when examining you.
c) Doctor listened carefully to what you said to him and fully understood your concern.
d) The doctor gave you the opportunity to discuss your treatment with him.
e) Did the doctor explain about prescribed medicines and home instructions?
f) Availability of examination equipments.

**Inference:** Patients are satisfied with the service provided by doctors in OPD, TTH. Median Score Rank – one with 7 departments in the OPD Services mentioned:

Hypothesis Test Summary

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Doctors _Xam_resp is the same across categores of Department | Independent Samples Wallis Test | .015 | Reject the null hypothesis. |
| 2. | The distribution of time_spent_ doctors is the same acorss categoreis of Departments | Independent samples kruskal wallis Test | .0177 | Reject the null hypothesis.. |
| 3. | The distribution of doctors_ listen the same across categories of Departments. | Independent samples kruskal wallis Test | .038 | Reject the null hypothesis.. |
| 4 | The distribution of doctors_ discuss treatement is the same across categories of Departments. | Independent samples kruskal wallis Test | 0.396 | Reject the null hypothesis. |
| 5 | The distribution of doctors_ explain_med_ins is the same across categories of Departments. | Independent samples kruskal wallis Test | .0289 | Reject the null hypothesis. |
| 6 | The distribution of Availibility_equipments is the same across categories of Departments. | Independent samples kruskal wallis Test | .262 | Reject the null hypothesis. |
| 7 | The distribution of Enough doctors_ is the same across categories of Departments. | Independent samples kruskal wallis Test | .227 | Reject the null hypothesis. |

Asymptotic signific anoes are displayed. the Significance level is .05
Pairwise Comparisons of Departments




## Conclusion

To compose a healthcare system that provides efficient, effective, and consistent care, it is important that healthcare organizations apply the principles of quality improvement in all aspects of Patient and clinical care. The improved value of care rendering prevents cost burden negative patient outcomes through quality improvement initiatives that promote care efficiency, patient-centered care, and provider coordination, value of a patient at affordable cost and clinical best practices.

It is possible to apply principles of total quality management in healthcare organizations. The quality improvement is a continuous process. As the Deming postulated: Many organizations learn about lean tools and methods, and see this as another approach to drive costs out of the Organization. While the tools and "event based" approach can and does yield results, it cannot be sustained without cultural change that comes from management. Dr. Deming described this as the "transformation of management".

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