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Original Article

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Interpretation of an Injury produced by a Dangerous Weapon by a Medicolegal Expert: A Discussion

Dey Arijit[1], Sharma Neha[2], Prasad Kulbhushan[3], Yadav Abhishek[4], Gupta Sudhir[5]

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Abstract

When there is an incidence of crime or suspected crime in the form of scuffle, body harm, accident, homicide, resulting into simple, grievous, dangerous injury, or death of human being it become a subject matter of criminal investigation and is treated as medico legal case or in very common word a police case. The legal investigation begins with when, where, how this happened and who are the accused and the priority of the investigator any responsible citizen who are at the scene of incident is to transfer the injured to the nearest suitable hospital. In accordance with Section 39 of Criminal Procedure Code of India it is legal duty of the treating doctor to inform the nearest police station as soon as he/she completes his primary care. The idea is the earliest legal proceeding so that the maximum evidences could be collected by the police officer as well as minimum destruction of evidences, site of occurrence, could be possible knowingly or unknowingly by any party. The duty of the attending doctor is to record all the injuries, its dimension as far as possible, and the body parts where the injuries are located the nature of injury whether simple or grievous, caused by sharp/blunt object, age or duration of injury and with other vital parameters of the patient, so that specific answers may be given for legal investigation and to book a case under law of land. Introduction

Keywords: Grievous Hurt; Dangerous Weapon; Endangering life; Forensic Expert; Medicolegal opinion.

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Introduction

Hurt (Section 319 IPC): Whoever causes bodily pain, disease or infirmity to any person is said to cause hurt. In day to day medical practice, the doctor frequently makes the medicolegal report of criminally injured person, who has suffered bodily pain and wounded due to mechanical injury, chemical injury, thermal injury or torture injuries, which has been defined as any harm, whatever illegally caused to any person in the body in Section 44 of IPC. Hence, he has to make a certificate in the form of Medicolegal report, about the nature of injuries and weapon used, with duration of injuries. Section 319 of IPC defines separately hurt as bodily pain, disease or infirmity, which is also a physical harm, which is included in legal definition of injury. Hence, it can be said that physical injury caused illegally and hurt have the same legal meaning.

Grievous Hurt (Section 320 IPC)

The following kinds of hurt only are designated as 'Grievous'-

Firstly- Emasculation.

Secondly- Permanent privation of the sight of either eye.

Thirdly- Permanent privation of hearing of either ear.

Fourthly- Privation of any member or joint.

Fifthly- Destruction or permanent impairing of powers of any member or joint.

Sixthly- Permanent disfiguration of head or face.

Seventhly- Fracture or dislocation of a bone or tooth.

Eighthly- Any hurt which endangers life or which causes the sufferer to be during the space of twenty days in severe bodily pain, or unable to follow his ordinary pursuits.[1-4]

Discussion

Clause 8 of Grievous Hurt has three independent components means one component is sufficient to qualify to be called as Grievous hurt, which are

i. Any hurt which endangers life or
ii. Any hurt which causes the victim to be in severe bodily pain or
iii. Any hurt which causes the victim to be unable to follow his ordinary pursuits for a period of 20 days.

Explanation for Component i: Any hurt which endangers life: An injury is said to endanger life, if it is such that it may put the life of the injured in danger. An injury caused on the vital part cannot be called a grievous injury unless the nature and dimensions of the injury or its effects are such that the doctor is of the opinion that it actually endangers the life of the victim. To designate the injury as grievous hurt, danger to life should be imminent. Dangerous injuries are those which cause imminent danger to life, either by involvement of important organs or structures or extensive area of the body. If no surgical aid is available, such injuries may prove fatal. Some examples of injuries which endanger life are—stab on the abdomen or head or vital part, hurt causing rupture on spleen, squeezing testicles, incised wounds on the neck, compound fracture of the skull, rupture of an internal organ, and injury of a large blood vessel.Danger to life should be imminent to be certified as dangerous injury.There is a fine distinction in the degree of bodily injury between dangerous to life and likely to cause death. Another type of bodily injury which is sufficient in the ordinary course of nature to cause death is also to be recognized. However, the injuries which prove fatal remotely by incurrent diseases such as tetanus, should not be considered dangerous. If an opinion as regards the nature of a particular injury cannot be formed at the time of the examination, as in the case of an extensive swelling of a limb when its fracture cannot be detected, or in the case of a head-injury where the symptoms are obscure, the injured person must be either re-examined 24–48 hours after the initial clinical examination; or he should be admitted under observation until a definite opinion can be formed and police should be notified of this.

Examples of injuries which endanger life are:

- Penetrating cavity deep stab or firearm missile on abdomen, chest, head or neck.
- Compound fracture of the skull with brain injury.
- Rupture of an internal organ leading to massive bleeding.
- Injury of a large blood vessel leading to massive bleeding.
- A wound of an artery leading to massive bleeding
- Rupture of some internal organ such as the liver that leads to massive bleeding.

Explanation for Component ii: Severe bodily pain for a period of 20 days: When any person is complaining of severe body pain due to any criminal injury or hurt, then for ordinary doctor, it is very difficult to certify that an injured person is in severe bodily pain for 20 days. Hence, in such type of cases, the visible injuries, complaints, signs and symptoms should be noted in MLR and nowadays to diagnose severe pain, score in the Pain Assessment Scale is being used and these types of cases should be referred to a specialized pain clinic. However, these types of cases are rarest of rare, in legal investigation and mostly seen in combination with body pain and the component iii.

Explanation for Component iii: Unable to follow his ordinary pursuits for a period of 20 days: The length of time during which an injured person is in pain, disease, or is not able to pursue his ordinary daily routine work. Ordinary pursuits mean going to toilet, taking a bath, wearing clothes, using tooth brush, shaving beard, eating and daily day-to-day activities. It is employed not only in cases where violence has been used, but also in cases where hurt has been caused without any assault, e.g., by administration of drugs or poison. A mere stay of 20 days in the hospital does not make an injury grievous unless the person was in severe bodily pain or unable to follow his ordinary pursuits for a period of 20 days. To certify the injuries in this clause, doctor must observe the patient very carefully and closely and if consented by the patient, police or authority, the CCTV recording of the hospital stay and activity of 20 days should be made a part of report.

Weapon used for causing Injuries on human body:

There is only one weapon as dangerous weapon has been defined in the Indian Penal Code which is dangerous weapon which is called generally by doctor as sharp force and any other weapon than dangerous weapon is simple weapon or generally it is called by doctor as blunt force. The IPC 324

defines the dangerous weapon as-"Any instrument for shooting, stabbing, or cutting, or any instrument which, used as a weapon of offence, is likely to cause death or by means of fire or any heated substance, or by means of any poison, or any corrosive substance, or by means of any explosive substance, or by means of any substance which is deleterious to the human body to inhale, to swallow, or to receive into the blood, or by means of any animal, shall be punished with imprisonment of either description for term which may extend to three years, or with fine or with both."

Explanation: Dangerous weapon means any weapon or instrument used for cutting, shooting, stabbing. The dangerous weapons are generally referred by the doctor preparing the wound certificate as sharp weapon or sharp force. Some of the photographs and elaboration of these dangerous weapons (sharp force/weapon) are given below-

a) Light weight sharp cutting weapon- like knife, scalpel, razor
b) Heavy weight sharp splitting weapon- like axe, hatchet, saber
c) Pointed weapon- like dagger, needle, arrow, ice pick, sword
d) Firearm.- like shotgun, rifle, revolver and pistol
e) Poisons- like organic and inorganic
f) Corrosives- like acids and alkalis
g) Explosive materials, bombs
h) Fire or any heated substance
i) Bitten by trained animal- snake,dog.

Nature of injury produced by weapons[5]

Injury has been defined in section 320 of IPC as grievous hurt in eight clauses, other than these injuries are treated as simple injuries. The Indian Penal Code has Sections 323,324,325 and 326 dealing with these injuries in combination with types of weapons used causing simple or grievous hurt which can be:

a) Simple hurt caused by simple weapon or non-dangerous weapon for other than a Government official on duty, it is punishable under Section 323 IPC, which states verbatim as "Whoever, except in the case provided for by section 334, voluntarily causes hurt, shall be punished with imprisonment of either description for a term which may extend to one year, or with fine which may extend to one thousand rupees or with both."
b) Simple hurt caused by dangerous weapon, is punishable under Section 324 IPC, which states that "Whoever, except in the case provided for by section 334, voluntarily causes hurt by means of any instrument for shooting, stabbing, or cutting, or any instrument which, used as a weapon of offence, is likely to cause death or by means of fire or any heated substance, or by means of any poison, or any corrosive substance, or by means of any explosive substance, or by means of any substance which is deleterious to the human body to inhale, to swallow, or to receive into the blood, or by means of any animal, shall be punished with imprisonment of either description for term which may extend to three years, or with fine or with both."
c) Grievous hurt caused by simple weapon or non-dangerous weapon is punishable under Section 325 IPC, which states that "Whoever, except in case provided for by section 335, voluntarily causing grievous hurt, shall be punished with imprisonment of either description for term which may extend to seven years, and shall be liable to fine."
d) Grievous hurt caused by dangerous weapon is punishable under Section 326A IPC, which states that "Whoever, except in the case provided for by section 335, voluntarily causes grievous hurt by means of any instrument for shooting, stabbing, or cutting, or any instrument which, used as a weapon of offence, is likely to cause death or by means of fire or any heated substance, or by means of any poison, or any corrosive substance, or by means of any explosive substance, or by means of any substance which is deleterious to the human body to inhale, to swallow, or to receive into blood, or by means of animal, shall be punished with imprisonment for life, or with imprisonment of either description for term which may extend to 10 years, and shall also be liable to fine."

Important Court Judgments in relation to hurt and 320 IPC:

1. It was held in Atma Ram Vs The State of Punjab,[6] that the court has to form its own conclusion after seeing the nature and dimension of the injury, its location and the damage that it has caused. Even when an injury is described as to be one which endangers the life, the court has to apply its own mind and form its own opinion in regard to the nature of injury. It was also held that wherever a doctor

describes an injury as 'dangerous to life' and the nature of the injuries is such which could merit such a conclusion, then such an injury has to be treated as 'grievous hurt'. In this case Injury inflicted by accused was opined by the doctor, as dangerous to life and was declared grievous in nature.

2. It was held in Dev Raj v. State of Punjab,[7] that the accused was liable to be convicted for grievous hurt and not murder. The accused caused gunshot injuries to his victim, who died one and a half months after the incident. During that period he was operated and for purpose of surgeries several incised wounds were caused. He died due to the second haemorrhage when his arm was amputated.
3. In a free fight between two groups resulting in death of one and injuries to several others, the accused inflicted only one injury on the head of the deceased and was not found responsible for the other fatal injury. His conviction under S. 326 was held to be proper but the sentence of 7 years' rigorous imprisonment was reduced to 3 years.[8]
4. In another case, after taking the medical evidence into consideration and the nature of weapons used on the deceased, the court was of the view that the common object of accused person, was not to commit murder but only to cause grievous hurt, the court altered the conviction of accused under S. 302 to one under S. 326.[9]
5. Injuries not serious enough to endanger life—it was proved that the accused persons caused injuries which led to the victim's death. He did not receive any medical assistance for full four hours. He lost a lot of blood which became the cause of death none of the injuries were on the vital parts of the body. They were not serious enough to endanger life by themselves. The court said that at the highest, the accused persons could be said to be guilty under S 326/34 for causing grievous hurt.[10]

Conclusion

In the case of multiple injuries inflicted on a person by more than one accused either at the same time or at different time, it is very essential to discover the injury which proved fatal, and whether it was the result of one or more blows, for the defense pleader may admit death, but may plead that it was not due to the wound attributable to that injury. This can be ascertained by examining the wounds individually and noting which of them involved injury to some vital organ or large blood vessel, or led to secondary results causing death. It is the duty of the medical officer to know the law correctly and apply them in their strict sense while giving expert medical opinion. The medical expert witness is expected to put before the court all scientific facts which led him to the conclusion. Medical evidence is important corroborative evidence in the court of law. Once the expert opinion is accepted by the court it is not the opinion of the doctor but of the court. The investigating officer should thoroughly investigate the case and collect all the available scientific and circumstantial evidences to assist in the logical conclusion in the case. Finally, the judiciary will interpret the law and apply it according to the fact and circumstances of each case and deliver justice.

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Original Article

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Prognostication: An art forgotten

Bidita Khandelwal[1], Sumit Kar[2], Vijay P Singh[3]

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Abstract

Dr. Christian Sinclair, Medical Director of the Providence Medical Centre Palliative Care Team, Kansas defined Medical Prognostication as "a prediction of future medical outcomes of a treatment or a disease course based on medical knowledge". Some confuse it with 'fortune telling'. But it is actually fore seeing or foretelling and not talking on behalf of God as the future events are neither created by doctors nor is there a divine angle to it. Of the three main pillars of clinical medicine - diagnosis, prognosis and treatment, the most difficult and unfortunately most neglected is prognosis. Several prediction tools and indices are available but it is important to remember the prognostication triad (disease factors, extraneous factors and treatment modalities available) for proper application of these mathematical tools. Formulating accurate predictions and communicating them effectively can not only help patient and his family to take judicious decisions especially in emergency situation and end of life care but also reduce the miscommunication which is often a reason for dissatisfaction among the patient. Prognostication is a dying art, a lost skill and what Hippocrates had written in 400 BC "Declare the past, diagnose the present, foretell the future; practice these arts" is the need of the hour. The skill needs to be understood, learnt and practised in order to master it.

Key words: Art of Medicine; Prediction tools; Prognostication.

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Introduction:

Prognostication is the prediction of the likely outcome of one's present standing. Medical prognostication is a prediction of future medical outcomes of a treatment or a disease course based on medical knowledge1It is a fundamental and a traditional core clinical skill in the practice of Medicine, but unfortunately, forgotten by most. In the "Art and Science" of Medicine, one of the important art is the skill of prognostication which like any other skill needs to be acquired, practised and exhibited. Diagnosis, prognosis and treatment are the three main components of clinical medicine and of them prognosis is most complex and difficult.

Need for prognostication

For the physician it is important to prognosticate as it directs decision making and management strategy. It helps in classifying patients into meaningful groups by scientists and researchers for comparison. The health care analysts calculate the cost effectiveness of a particular treatment protocol based on the prognosis. In addition, the patient and his family needs to be assisted in taking judicious medical decisions which are directed and not just bothersome.[2]

History

Hippocrates in his Book of Prognostics written in 400 B. C has the opening remarks "It appears to me a most excellent thing for the physician to cultivate prognosis; for by foreseeing and foretelling, in the presence of the sick, the present, the past, and the future, and explaining the omissions which patients

have been guilty of, he will be the more readily believed to be acquainted with the circumstances of the sick; so that men will have confidence to entrust themselves to such a physician."3 In 19th century physicians practicing the French school of Medicine had the main aim of arriving to a diagnosis and offering a satisfying prognosis while curing the disease was secondary. With the shift to Western Medicine the focus shifted to curing the disease. Medical textbooks of end 19th century devoted ten percent to the topic of prognostication but by 1950 it started decreasing and finally there is no mention regarding prognostication in the text books even today.

Prognostication and Bioethics

Expectation of the patient is an accurate, optimistic yet honest prognosis from the physician, which is often impossible. As a result, physicians find themselves in a situation of "Sociological ambivalence" i.e. a situation that embodies contradictory demands placed on the occupants of a particular social role. Foreseeing and foretelling are two distinct elements of prognostication. Foreseeing is a physician's inward cognitive estimate about the future course of a patient's illness and foretelling is the physician's outward communication of the estimate to the patient. To respond to the daunting task of prognostication, physicians sometimes resort to religious or magical overtones which is not acceptable in the biomedical context. While unfavourable predictions are difficult to formulate and communicate, the favourable ones increases the onus on the physician. Favourable predictions, whether volunteered by physicians or elicited by patients make the patient belief that the physician will cause the favourable outcome that he has predicted.[4]

To further clarify the role of prognosis in bioethical decisions, a situation of bioethical reasoning about the withdrawal of life support can be discussed. The questions which may arise- The patient is going to die life support is of no further benefit and may be harming the patient. Should we withdraw life support? This pattern of reasoning often neglects issues like how do we know that the patient is going to die? How do we know that there is no further benefit in continuing with the same? Are we authorised to make such predictions? What if the predictions are wrong? What if other external factors influence the predictions? What if the predictions contribute to the outcome and change the 'reality' of the situation?

Prognostication triad

The complexity of Prognostication is based on several factors which is depicted by the prognostication triad. (Fig. 1)

Fig. 1: Prognostication Triad

Treatment	Extraneous Factors
Drugs	Co morbidities
Effects/side effects	Age/sex
Efficacy of Drugs	Genetic factors
Consultant's Expertise	Environmental influence

Commonly used estimators are:

1. Prognosis- free survival:
   The period during and after treatment in which the disease being treated does not get worse.
2. Survival rate:
   Percentage of people in treatment group who are alive for a period of time after diagnosis.
3. Survival time:
   The duration of life remaining from the time of diagnosis.

Predicting tools

Though several prognostic tools are available and applicable to specific population but accurate predictions are impossible and an universal tool for all diseases also cannot be recommended as of now. The tools are mostly research oriented and its application in clinical scenario is often limited. Predictive accuracy of weather forecasting has improved due to advancement in data collection techniques, innovative analytical methods

and information science. More accurate and individualized prognostication tools are required in order to progress in precision medicine. Identification and validation of key variables and integrating them into algorithms have improved the value of these tools. Efforts should be made for centralized, coordinated uniformity in development and standardisation in application; only then the consistency, utility and quality of the existing and quality of the existing prognostication tools will improve. Reasonable estimates can be calculated by simple mathematical modelling techniques but for prognostication more precise estimates and restoring prognostication as a core clinical proficiency is important. Further research is required in order to integrate validated prediction models with clinical predictions of survival.

Of the various prognostic tools and scales that are available, the most frequently used ones are those based on the patients functional status viz.

Karnofsky Performance Score (KPS)

David Karnofsky, an American oncologist, in 1949 stratified patients with terminal illness on a scale of 100 (fully functional) to 0 (dead). Self-care, burden of illness and activity are taken into account. This scale (Table 1) is more applicable to research settings rather than clinical application. Only 10% of patients with less than 50% score survive more than 6 months

Table 1: Karnofsky Performance Score (KPS)

%	Creteria
100	Normal; no complaints; no evidence of disease
90	Able to carry on normal activity; minor signs or symptoms of disease
80	Normal activity with effort; some signs or symptoms of disease
70	Cares for self; unable to carry on normal activity or to do active wor
60	Requires considerable assistance and frequent medical care
50	Disabled; requires special care and assistanc
40	Severely disabled; hospitalisation is indicated, although death not imminent
30	Severely disabled; hospitalisation is indicated, although death not imminen
20	Very sick; hospitalisation necessary; active support treatment is necessar
10	Moribund; fatal processes
0	Dead

Palliative Performance Scale (PPS)

Table 2: Palliative Performance Scale (PPS)

%	Ambulation	Activity level Evidence of disease	Self-care	Intake	Level of Consciousness	Estimated median survival in days		
100	Full	Normal No disease	Full	Normal	Full	(a)	(b)	(c)
90	Full	Normal Some disease	Full	Normal	Full	NA	NA	108
80	Full	Normal with effort Some disease	Full	Normal	Full			
70	Reduced	Cant do normal job or work Some disease	Full	Normal or reduced	Full	45		
60	Reduced	Cant do hobbies or housework Significant disease	Occasional assistance needed	As above	Full or confusion	29	4	
50	Mainly sit/lie	Cant do any work Extensive disease	Considerable assistance needed	As above	Full or confusion	30	11	41
40	Mainly sit/bed	As above	Mainly assistance	As above	full or drowsy or confusion	18	8	
30	Bed Bound	As above	Total Care	Reduced	As above	5	E	
20	Bed Bound	As above	As above	Minimal		4	2	6
10	Bed Bound	As above	As above	Mouth care only	As above	1	1	
0	Bed Bound							

Palliative Performance Scale (Table 2) is a modification of KPS which has incorporated additional functional domains like level of consciousness, ambulation, level of disease and oral intake. This scale is useful for application to patients in the community as well as clinic.

Palliative Prognostic Index(PPI)

In Palliative Prognostic Index (Table 3) apart from PPS and oral intake, symptoms(dyspnea, delirium) and signs (edema) are also taken into account. It has a sensitivity of 80% and a specificity of 85%. PPI of more than 6.0 has a survival of less than 3 weeks.

Table 3: Palliative Prognostic Index

Variable	Partial Score Value	
PPS		
10-20	4	
30-50	2.5	
60+	0	
Oral Intake		
Severely Reduced	2.5	
Moderately Reduced	10	
Normal	0	
Edema		
Present	1.0	
Absent	0	
Dyspnea at Rest		
Present	3.5	
Absent	0	
Delirium		
Present	4.0	
Absent	0	
Total Score	6 week survival	
	PPV	NPV
	0.83	071

Palliative Prognostic Score (PnP) is also used for prognostication (Table 4).

Table 4: The Palliative Prognostic Score (PnP)

Criterion	Assessment	Partial Score
Dyspnea	No	0
	Yes	1
Anorexia	No	0
	Yes	1.5
Karnofsky Performance Slatus	≥3 10-20	0
		2.5
	> 12	0
Clinical Prediction of Survival (weeks)	11-12	2.5
	7-10	4.5
	5-6	6
	3-4	
	1-2	8.5
Total WBC ($x10^9$/L)	≤8.5 8.6 - 11	0
	>11	0.5
		1.5
Lymphocyte Percentage	20-40%	0
	12-19.9%	1
	<12%	2.5
Risk Group	30 Day	Total Score
A	Survival	0.55
B	>70%	0-5.5
C	30-70%	11.1-17.5

Several validated disease specific (organ specify) prognostication scales are available, viz

1. Cardiac (NYHA class, seattle Heart Failure Model)
2. Pulmonary (BODE Index)
3. Renal (Age modified Charleston Comorbidity Index)
4. Hepatic (MELD Score in end stage liver disease)
5. Dementia (FAST staging, Mortality Risk Index)
6. CHF-OPTIMIZE-HF (Heart failure quality improvement study normogram)

Biochemical parameters

Several biochemical parameters predict poor prognosis and maybe used individually or in combination.

- Low serum Albumin denotes long standing malnutrition
- High TC / Low lymphocyte % denotes immunosuppressive state of the patient.
- Persistent hyponatremia in spite of corrective measures.
- Thrombocytosis is a negative prognostic indicator in multiple cancers.
- High serum Bilirubin denotes active liver failureor sepsis.
- High Alk. Phosphatase denotes increased metabolic state at present.
- High LDH indicates high cell metabolism.
- High CRP denoting increased metabolism / cell turnover.
- Vit B 12 >600pmol/L in Hematologic disorders likechronic myelogenous leukaemia, polycythaemia vera, promyelocytic leukaemia, hyper eosinophilic syndrome, acute hepatitis, hepatocellular carcinoma, cirrhosis and metastatic liver disease.

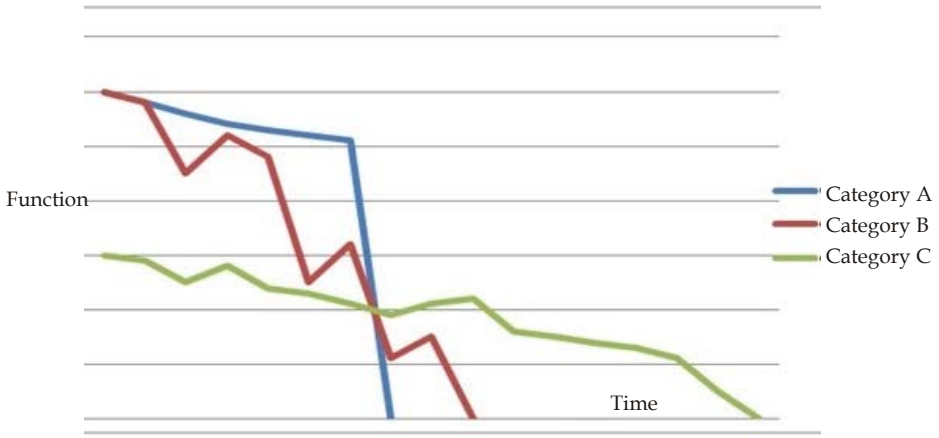

Fig. 2: Advanced disease trajectories

- Uric Acid >7.2/dl denotes high cell turnover and hyper metabolism.

Majority of the advanced disease trajectories fall into one of three categories (Fig. 2)

1. Category A: Seen in malignancy where functional status of the patient is maintained for months to years when an acute event leads to mortality.
2. Category B: Often seen in chronic obstructive airway diseases and congestive cardiac failure. It is characterised by slow decline due to episodes of acute decomposition with partial recovery.
3. Category C is seen in diseases which usually has at onset, functional or cognitive deficits. Example. Dementia, chronic neurological diseases etc. At a variable interval from onset there is progressive decline.[5]

Functional incapacitation caused by the disease is also an important parameter which should be considered along with the trajectory curve.

Approach for discussing prognosis

Communicating the prognosis is a difficult task. No formal training is included in the medical education. Finlay and Casarett reinforce SPIKES protocol, developed by Walter Baile, as a good tool.

The first step is setting (S) of the discussion which includes the preparation of the physician and the patient (and family members) as well as the physical environment. The second step is perception (Prognostication) i.e. to assess how much patient understands about his disease. The third step is Invitation and information (I), i.e. understanding patient's preference regarding the quantity and the context of what patient desires to hear. The fourth step is knowledge (K) i.e. after ensuring S, P and I, the actual information is delivered to the patient and family. The next step is Emotion and empathy (E) i.e. understanding the patients (and family members) reactions and emotions as well as clarifying any further doubts. Finally 'S' is for summarizing and strategizing in order to ensure that the discussion has been understood. This is not the end, the physician should subsequently help patient and relatives to take meaningful decisions.

Several studies have demonstrated physicians tendency to overestimate survival as they rely more on clinical predictions. It has been observed that average of several physicians prognosis is often more accurate than that of a single physician. It is best to deliver prognosis in terms of time frame rather than specific time periods i.e. Hours to days or days to weeks or months to years etc.

When communicating a prognosis it is necessary to consider cultural and personal differences as well as patients desire pertaining to method of delivery and quantum of information. The corners tone of patient centred care and prognostic conversation is good communication.

In a seriously ill patient it is a daunting task to have a meaningful conversation in an emotionally charged environment. All the participants i.e. the patient, the family members and the clinicians should have a supporting communication behaviour in order to create a model of communication that address the dynamics.

Conclusion

Clinician's accuracy in determining prognosis is aided by the disease specific prognostication tools. However, Physicians clinical experience and intuition should not be ignored and should add to the skill. In a review by Innes and Payne's in 2009 on whether the patients want to know their prognosis, majority of the patients wanted some information about their future in an honest way. Integrated validated prediction models with clinical predictions of survival and formal training in the medical education can make todays physicians' better prognosticators.

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Original Article

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A Study on Nurses of New Delhi regarding Knowledge, Risk perception and Practice related to HIV Positive Patient Care

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Abstract:

Introduction: Due to frequent and prolonged contact, Nursing staff are being identified as a potential risk group for the HIV/AIDS spread. To reduce the transmission, adequate knowledge about the disease and practice of safety measures are of great importance. *Objectives*: To assess the knowledge, risk perception and practice of nursing staff towards HIV/AIDS patients. *Methodology*: The study was conducted from November 2019 to January 2020 in three tertiary health care institute in New Delhi. A total of 250 nurses were included and provided with a predesigned pretested questionnaire. *Result*: 86% of respondents correctly know that HIV is the agent that causes AIDS. 94% of the respondents know about spread of HIV via different modes of sexual contact. 96% nurses know that an accidental needle stick injury in the workplace can also transmit AIDS. Only 6.8% of the nurses believed that the AIDS patients should be isolated from the community because of their illness. 97% of nurses believed that HIV patients have right to the same quality of care & respect as other patients. 53% of nurses never recap needle, 62% of nurses always wipe any blood spills, 8% of nurse never put used needle in sharp container. *Conclusion*: Periodic training for HIV/AIDS should be made compulsory for all nurses related to different aspects of HIV. Such training should include both theoretical knowledge & practical demonstration and should be followed by evaluation process. The study focuses on the need to train the nursing staff and ensure better patient care in the hospital.

Key words: HIV/AIDS; Nursing staff; Knowledge; Attitude; Risk Perception; Practice; Training.

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Introduction

In the present world, several patients are infected with Human Immunodeficiency Virus (HIV) and they require greater amount of specific care and empathy, due to the complexity of their disease. Every HIV positive patient is a potential candidate for disease transmission to the attending health care workers. Amongst the health care professionals, nurses and nursing students are an important component of the health care delivery system. Since they are the one who are responsible for the constant care of in-patients and thus, they come in close contact with blood and other body fluids of patients and are a potential risk group for HIV spread. To reduce the transmission, adequate knowledge about the disease and practice of safety measures are of great importance.[1]

This can only be ensured if the hospital staff are well trained and fully updated about the recent treatment protocols to handle the complicated situation of the patients. HIV is the cause of the Acquired Immunodeficiency Syndrome (AIDS) where there is impairment of the immune system of the infected patient making him prone to other infections leading to death. Though the doctors bear the responsibility of managing the HIV patients based on the severity of their illness, but even in the ward services, they need co-operation of a dedicated well trained Nursing team 2. The present study focuses on this aspect of training of the nursing staff to ensure that they deliver better patient services.

Material and Methods

The specific aim and objectives of this study are:

1. To assess nurses' knowledge of HIV/AIDS in different aspects.

2. To identify attitudes and risk perception of HIV infection.
3. To assess practices in taking universal protective measures and discrimination of service towards HIV positive patients.

This is a cross-sectional institution based study conducted in three tertiary care hospitals of New Delhi, for a period of three months (01-11-2019 to 31-01-2020). The sample size comprised of 250 nursing staffs from three hospitals, with a minimum 5 years work experience, who were selected by applying simple random sampling technique using computer generated random numbers after assigning all the eligible nurses a serial number. Each of them were provided with a pretested, predesigned close ended Questionnaire, which was pre-validated for this study to obtain quantitative data to identify predictive factors associated with patient care. At the start of the sessions participants were asked whether they approved to participate (in an anonymous manner) by completing the self-administered questionnaire. Subjects were fully informed about the purpose and design of the study and a written consent was taken. Knowledge component of Nurses was assessed under the following variables—Mode of transmission of HIV, Prevention of HIV, Risk of professional exposure, Use of disposable instruments, Transmission of HIV from mother to child and Exclusive breast feeding & weaning. Their attitudes and common beliefs towards HIV positive patient care was also assessed, along with their risk perception in various daily nursing activities. The variables to assess common practice included HIV testing in suspected cases, use of personal protective devices, proper disposal of hazardous and contaminated materials and discrimination between HIV positive cases with others.

Results and Discussion

Among the 250 respondents, 62% received training on HIV/AIDS & 38% did not receive any training, during their Nursing academic course. In our study, regarding knowledge about HIV, as observed in Table 1, it was found that 79.6% were aware of the fact that HIV/AIDS is caused by a virus. 86% of respondents correctly know that HIV is the agent that causes AIDS. 65% of respondents correctly answered that later stage of HIV is known as AIDS. These findings were quite similar to the findings of previous studies of several research workers like a study by Sachdeva et al. 3 revealed that a majority of nurses were able to correctly write the full form of AIDS (95.8%) in comparison to HIV (72.6%) and the difference between two terminologies were known to 81.1%. It was observed that most of the respondents (94%) have good knowledge about spread of HIV via different modes of sexual contact. The fact that AIDS can be transmitted through blood in various ways is also known to most of nurses e.g. receiving blood from HIV + patients (86%) & exposure to blood when taking care of patients (86.8%). A study by Bhat et al. 4 revealed only 63(25%) subjects had the correct information of the 0.3% risk of infection through needle stick injury. Another study conducted among nurses in Turkey 5 revealed that 88.65% knew that HIV/AIDS was caused by a virus and 80% knew the definition of AIDS. 96% nurses know that an accidental needle stick injury in the workplace can also transmit AIDS. In contrast, a study conducted among in China 6 revealed that all knew of transmission through infected blood and needle stick injuries. AIDS is transmitted from mother to child—this is well known to respondents, as 76.8% of them know it spreads while breast feeding & 96% nurse know that it is transmitted while delivery of the baby. Regarding knowledge on different preventive strategies 90.8% nurses know that instruments & equipment should be properly sterilized to prevent HIV transmission, 94.4% respondents know that Personal Protective Devices must be used during invasive procedures & 94% knew that AIDS can be prevented by using condom during intercourse. However only 68.8% of the respondents are correctly aware of the fact that 'Not recapping of needle' is an important preventive strategy, which is not a good response. This was similar to the findings of the study by I Manzoor et al. 7 in Abbottabad, Pakistan. Knowledge regarding Infant Feeding Practices was also poor among nurses, as only 50.4% knew that Exclusive Breast Feeding should be done, while 56.7% believe that the infant should be Formula fed and 59.6% responded that mixed feeding of infant should be practiced.

Table 2 summarizes the attitude of the respondents, which shows that 72% of them correctly believed that HIV positive patients should be put in same room with other patients, while 78.4% of them believed that Children should not be removed from the home of HIV patients. Only 6.8% of the nurses believed that the AIDS patients should be isolated from the community because of their illness. Overall, 97% of nurses believed that HIV patients have right to the same quality of care & respect as other patients and 84% believed that the status of HIV infected person must be kept confidential. These findings were consistent with

those observed by R Magazine et al. 8 in Karnataka, India. Regarding Perceived risk of infection, as observed in Table 3 of our study, it is seen that only 26% nurses think that touching HIV positive patients when assessing them is associated with risk. 89% respondent feel that lack of knowledge about HIV status of patient is of some risk to them. It shows that most of the nurses have an overestimated risk perception regarding the spread of HIV during casual contact. Regarding perceived risk during medical procedure our study reveals that 99% of the nurses can correctly perceive the high amount of risk involved in cleaning & dressing a wound without protection in a HIV positive person. About recapping needle after withdrawing blood from HIV positive patient only 9.6% nurses perceive this to be of no risk at all. It shows that most of the nurses have a correct risk perception regarding spread of HIV during medical procedure. These findings were similar to those observed by Fortenberry J et al.[9] In our study regarding practice, summarized in Table 4, it is observed that 53% of nurses never recap needle, 62% of nurses always wipe any blood spills, 88% of nurse always covers any broken skin during practice, 8% of nurse never put used needle in sharp container. 89.6% of nurse thinks that HIV testing is mandatory before any surgery. In other studies, like a study of nurses in Zambia 10, it was found that 76.1% practiced universal precaution. Overall, considering all the different variables in the three different domains of Knowledge, Risk perception and practice of nurses regarding HIV positive patient care, it can be concluded that there is significant difference between trained and untrained nurses regarding the above facts. The results of this study can be utilized in planning educational training interventions.

Table 1: Assessment of Knowledge Regarding HIV/AIDS Among Nurses

Knowledge variables	Received HIV training (n = 155)	Received No training (n = 95)	Total (n=250)
HIV is a different disease from AIDS	140 (90.3%)	59 (62.1%)	199 (79.6%)
HIV is the virus that causes AIDS	129 (83.2%)	86 (90.5%)	215 (86.0%)
The later stage of HIV is known as AIDS	111 (71.6%)	45 (47.3%)	156 (65.0%)
STD increase the risk of HIV infection	155 (100%)	93 (98%)	248 (99.2%)
Transmitted by Vaginal and anal intercourse	143 (92.3%)	92 (96%)	235 (94%)
Transmitted by Blood transfusion	150 (96.7%)	65 (68.4%)	215 (86%)
Transmitted by needle stick injury	150 (96.7)	90 (94.7)	240 (96%)
Transmitted From mother to child	150 (96.7%)	90 (94.7%)	240 (96%)
Exposure while caring for patients	137 (88.4%)	80 (84.2%)	217 (86.8%)
Transmitted by Breast feeding	122 (78.7%)	70 (73.6%)	192 (76.8%)
Prevented by using Personal Protection	146 (94.2%)	90 (94.7%)	236 (94.4%)
Prevented by condom during intercourse	145 (93.5%)	90 (94.7%)	235 (94%)
Prevented by using separate equipment for HIV positive patients	83 (53.5%)	30 (31.5%)	113 (45.2%)
HIV positive mother should Exclusively breast feed infant	83 (53.5%)	43 (45.2%)	126 (50.4%)
HIV positive mother should Formula feed infant	90 (58.1%)	52 (54.7%)	142 (56.8%)
HIV positive mother should Mixed feed infant	97 (62.6%)	52 (54.7%)	149 (59.6%)

Table 2: Attitude & Belief of Nurses Towards Care of HIV Positive Patients

Attitude & Belief Variables	Trained (n = 155)		Not trained(n =95)		Total (n= 250)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
HIV patients should be put in same room with other patients	123(79.3%)	26 (16.7%)	57 (60%)	31 (32.6%)	180 (72%)	57 (22.8%)
Children should be removed from the home of HIV patients	23 (14.8%)	119 (76.7%)	11(11%)	77(81%)	34 (13%)	196 (78.4%)
HIV patients should be isolated from the community	12 (7.7%)	121 (78%)	5 (5.2%)	77(81%)	17 (6.8%)	198 (79.2%)
HIV patients have right to the same quality of care & respect as others	152 (98%)	0	92 (97%)	3 (3%)	244 (97%)	3 (1%)
Status of HIV+ person must be kept confidential	132 (85%)	8 (5%)	77 (81%)	9 (9.4%)	209 (84%)	17(7%)

Table 3: Statement Related to Risk Perception of Nurses Towards HIV Positive Patients

Risk Perception Variables	Trained (n=155)		Not Trained (n=95)		Total (n=250)	
	Risk	No risk	Risk	No risk	Risk	No risk
Touching HIV+ patient when assessing them	39 (25%)	116 (75%)	25 (26.3%)	70 (73.7%)	64 (26%)	186 (74%)
Not knowing a patient's HIV status while providing care	137 (88%)	18 (12%)	87 (91.5%)	8 (8.4%)	224 (89%)	26 (11%)
Wound Dressing without protection in HIV^+ patient	153 (98%)	2 (2%)	94 (99%)	1 (1%)	247 (99%)	3 (1%)
Delivering babies of HIV+ mother without protection	155 (100%)	0 (0%)	94 (99%)	1 (1%)	249 (99%)	1 (1%)
Recapping needles after using them on HIV^+ patient	138 (89%)	17 (11%)	88 (93%)	7 (7%)	226 (90%)	24 (10%)

Table 4: Protective Practice of Nurse Towards HIV Positive Patients

Protective Practice of Nurse	Trained (n=155)		Not Trained (n=95)		Total (n=250)	
	Always	Never	Always	Never	Always	Never
Wearing Gloves	122(78.7%)	7(4.5%)	81(85.3%)	3(5.2%)	209(83.6%)	10(4%)
Hand washing	150(96.7%)	2(3.3%)	94(99%)	1(1%)	244(98%)	3(2%)
Wearing Aprons	74(47.7%)	13(8.4%)	54(56.8%)	9(9.5%)	128(51%)	22(9%)
Using Eye protection	53(34.2%)	20(13%)	31(32.6%)	19(20%)	84(33.6%)	39(16%)
Wearing Mask	61(39.3%)	20(12.9%)	44(46.3%)	10(10.5%)	105(42%)	30(12%)
Needle recapping	62(40%)	82(52.3%)	34(35.8%)	50(52.6%)	96(38.4%)	132(53%)
Wiping blood spills	96(61.9%)	46(29.7%)	59(62.1%)	24(25.3%)	155(62%)	70(28%)
Covering broken skin	132(85.2%)	6(3.8%)	88(92.6%)	7(7.4%)	220(88%)	13(5%)
Putting used needle in sharps container	122(78.7%)	14(9%)	83(87.4%)	7(7.4%)	205(82%)	21(8%)
Mandatory testing all patients before surgery	134(86.4%)	2(1.2%)	90(94.7%)	5(5.3%)	224(89.6%)	7(3%)

Conclusion

It is evident from the results obtained that special training among nurses regarding care of HIV positive patient leads to an improvement in their knowledge of this disease, which is reflected in their change in attitude towards these patients and also in their practice involving them. Hence, periodic training for HIV/AIDS should be made compulsory for all nurses related to epidemiology, clinical features of HIV and maintenance of Universal precautions and the importance of a humanitarian approach towards patient. Such training should include both theoretical & practical aspects and assessed by regular evaluation. The present study focuses on periodic training to ensure continued and updated knowledge of the nursing staff. The hospital administrator is responsible for ensuring that healthcare worker is dedicated, motivated and updated with recent international treatment protocol, to ensure efficient patient care service.

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Dilemma when an Admitted Patient Refuses Further Medical/Surgical Care by Treating Doctor and Hospital: The Doctrine of Informed Refusal Evoked

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Abstract

When a doctor or hospital enters in a contract of treating a patient with informed consent and due to whatever may be the reason s/he or his/her legal heirs do not want to continue further treatment with that doctor or hospital and want a discharge even in a life threatening condition of patient, the Doctrine of Informed Refusal is evoked. The role of doctor to treat his patient starts with valid consent and gets terminated with the valid refusal, hence keeping in view the right of the patient or his/her legal heirs to take autonomous decision for the treatment, the doctor has no right rather than to accept their choice and it must be documented as Informed Refusal or denial for treatment with one or two independent witnesses. The patient should be discharged with appropriate medical advice which may be Intravenous drip, use of Ventilator and assistance of doctorin safe transport of patient by road or air to the place or hospital of their choice.

Key words: Patient; Consent; Informed Refusal.

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Introduction

The doctor can only treat a patient after entering into a contract under section 13 of Indian Contract Act after an informed oral, implied or written consent. Consent is not valid if it is obtained in a blanket manner; it must be clearly mentioned and informed in written contract form. This consent can be terminated by patient and he can refuse for further treatment. The doctors are answerable under code of conduct from the Medical Council, Civil Court, Consumer Court as well as Criminal Court. The consent for treatment by a patient to treating doctor is defined under Section 13 of Indian Contract Act 1872 which states that "Two or more persons are said to be consented when they agree upon the same thing in the same sense" and as per Section 14 consent is said to be free "when it is not caused by coercion or undue influence or fraud or misinterpretation or mistake." The various sections of Indian Penal Code associated with Consent are:

Section 87 Indian Penal Code: A person above 18 years can give valid consent to suffer any harm which may result from an act not intended or not known to cause death or grievous hurt. For medical purpose a patient suffering from a disease which can cause death has full right to give valid consent for an operation which has risks involved with it.

Section 88 Indian Penal Code: A person can give valid consent to suffer any harm which may result from an act not intended or not known to cause death, done in good faith and for its benefit. For medical purpose if a doctor treats or operates a patient in good faith which may involve risks, in such cases doctor cannot be held responsible in case of death of patient.

Section 89 Indian Penal Code: Consent of the parent or guardian should be taken in case the patient is a child below the age of 12 years or insane and cannot give valid consent to suffer any harm which may result from an act done in good faith for his benefit.

Section 90 Indian Penal Code: Consent obtained by force, fear or fraud is not valid.

Section 91 Indian Penal Code: Consent given for an act which has no legal sanction (e.g. criminal abortion) is not valid whether or not the act causes injury to the consenting party.

Section 92 Indian Penal Code: In an emergency in which the patient is likely to die, lose a limb or suffer serious bodily harm in the absence of an operation, the surgeon is justified in performing such operations even without consent if the patient is unconscious or otherwise unable to give valid consent. As per the act, a person cannot be held liable for an act done in good faith (e.g. surgical operation) even if it was done without consent provided the persons was incapable of giving consent (patient in coma) and consent could not be obtained in time e.g. children admitted to hospital with fatal injuries whose parent or guardian is not at hand.[1]

Section 53 Criminal Procedure Code: When a person is arrested on a charge of committing an offence of such a nature and alleged to have been committed under such circumstances that there are reasonable grounds for believing that an examination of his person will afford evidence as to the commission of an offence, it shall be lawful for a registered medical practitioner, acting at the request of a police officer not below the rank of sub- inspector,and for any person acting in good faith in his aid and under his direction, to make such an examination of the person arrested as is reasonably necessary in order to ascertain the facts which may afford such evidence, and to use such force as is reasonably for that purpose. The medical examination is not only restricted to external examination and if required internal examination may be done. Whenever the person of a female is to be examined under this section, the examination shall be made only by, or under the supervision of, a female registered medical practitioner. The doctor under Section 53 of Criminal Procedure Code if required may collect sample of blood, saliva, urine, hair, nails, semen, swab etc for further laboratory examination 2.In medical practice Consent is mandatorybefore proceeding for treatment of the patient. A doctor cannot proceed for basic systemic examination, diagnostic and therapeutic procedure withoutconsent of patient. In an Outdoor patient, Consent is implied when a person approaches the doctor at his clinic for consultation, but for procedures of systemic examination oral consent is must and for more invasive diagnostic and treatment procedures, an informed consent in writing has to be taken mandatorily. However, it is the right of the patient to withdraw his/her consent for treatment or procedure at anytime of the consultation even under critical circumstances and against medical advice. Under such condition, doctrine of informed refusal plays a significant role.The doctor fraternity as well as corporate hospitals is well aware of the doctrine of Informed Written Consent but a larger portion is still unaware about the duty of doctor in case of Informed Refusal by patient or their legal heirs. However, the Doctrine of Informed Refusal is not applicable to any accused personinlegal custody as per Section 53 Criminal Procedure Code of India. Such person can be examined even without his consent and against his will on the request of custodian.[3,4]

What is Doctrine of Informed refusal?

Informed Refusal is reverse of Informed Consent, which has significantly received less medical and legal importance as compared to Informed Consent. Just as the patient has right to consent, he also has the right to refuse the treatment at any level even though the refusal may deteriorate his/her health condition. Similar to Informed Consent, it gives due respect to the final decision of the patient without putting any blame of negligence on the treating doctor. However, while giving Informed Refusal, the patient has to be in a state of compos mentis to give free informed consent or refusal i.e. not to be of unsound mind, intoxicated, drunk, semi-conscious etc and above 12 years of age to give valid consent. Under such circumstances next of kin or guardian has the authority to consent or refuse. Just like informed consent, informed refusal is much more than mere documentary signatures of the patient for refusal.It is the decision of the patient which depends upon a thorough consultation and discussion between the patient and his doctor regarding all the benefits, risks involved in the procedure and the consequences of opting out of the treatment. Unfortunately the concept of informed refusal is yet to be introduced formally in the medical practice; documentation of patient's denial to give consent for a procedure against medical advice is insufficient and needs a proper documentation with signatures of patient and witness. If the patient is incompetent to consent or refuse, the next of kin has the role for decision making.In case a doctor knows that the refusal for treatment is not for welfare of the patient then he must take following measures:

i. Ask the patient to reconsider his decision under informed explanation, if he is conscious.

ii. Ask the family members or guardians to improvise the decision about patient, under informed explanation, if he is unconscious or non-compos mentis.

iii. Inform the patient that he can come for treatment at any stage if he desires.

iv. Give him option for transportation or referral with information regarding the risks involved during such transportation.

v. In case of a person get admitted with his consent and become unconscious and non-compos mentis, who require further medical and surgical intervention to save his life and the doctor understands that the person will die if treatment is discontinued. In such cases, the Informed Refusal should be documented in writing and the police should be informed before discharge.

vi. In such cases, the Informed Refusal should also be signed by witnesses, and preferably police official to avoid any future legal complications. Such documentation is recommended to doctors to avoid any criminal or civil litigation.[5]

Informed Refusal and Ethical Issues

It is the right and authority of a patient with decision making capacity to withdraw or refuse treatment at his/her own will, but there are certain situations where a treating doctor has full knowledge about the consequences and is in an ethical dilemma for the patient's choice. Sometimes the refusal means death or disability for a lifetime which comes against the ethics of a medical practitioner to provide medical care for his patient. In case when the patient is a child less than 12 years of age, the right of decision is with the parents of guardians who may deny or refuse a life saving medical intervention. Also there are certain circumstances where a previously compos mentis patient who has given informed consent for treatment becomes non compos mentis unable to provide informed consent for further surgical and medical interventions, under such situations their legal heirs come into action for the decision making on part of patient to continue or discontinue treatment. Legal heir may refuse to continue treatment due to financial restrain, lack of wisdom to understand the gravity of medical treatment or some malicious intentions. Such situations are not only stressful for the parents/legal heir but also for the doctor who knows the consequences could result in mortality or morbidity and still bound to withhold medical care.[6,7] In case a doctor suspects some decisive behavior on part of legal heirs to discontinue treatment despite financial stability, he may inform police regarding the same, who in turn with the investigations and their involvement may counsel the heirs for continuation of the treatment.

Case Example

In 2017, a neonate was diagnosed of trachea-esophageal fistula and anorectal malformationand atresia at birth at AIIMS, New Delhi. The child was admitted to Neonatal Intensive Care Unit (NICU) for treatment and the pediatric surgery team planned for urgent repair of the defects. All the consequences of the planned intervention were informed to legal guardians in their vernacular language in details; however despite repeated counseling by the treating doctors parents refused consent for any surgical intervention. A Medical Board was formed to deal with such a sensitive case and the proceeding of Medical Board AIIMS was:

1. Any Medical or Surgical intervention on child below 12 years of age cannot be done by the treating doctors in absence of a valid consent from the legal guardians of the child.
2. All the consequences of the planned intervention should be informed to the legal guardians in a language they can understand by the treating doctors.
3. If the legal guardians still decide against the planned intervention, the same should be taken in writing in the format for "Informed Refusal" in the presence of two witnesses by the treating doctors.
4. Further required primary treatment has been given, the patient may be discharged. Parents to arrange a portable ventilator and ambulance with life support measures for safe transportation of the patient to the place decided by the parents.

Status of Informed Refusal in other countries

Informed refusal is a well established term and practiced routinely in most of the Western countries including United States of America, United Kingdom and Canada.[8] The patient's decision to refuse treatment is given the utmost value both ethically and legally. In United Kingdom and United States of America, the competent person has the right to refuse any medical treatment and the competent person includes a person above age of majority with sound mind. However, in Canada the Supreme Court allows informed refusal of medication even by a diagnosed patient of psychiatric disorder.[9,10]

Discussion

Though Informed Consent is popular among the medical practitioners owning to medicolegal obligation and consequence of legal litigation, informed refusal still remains a relatively new concept among the medical practitioners of the country. Informed refusal is as much as important as informed consent, and needs to be well documented. But it is not limited to documentation only, as all the aspects of the treatment or the procedure which patient tends to refuse should be discussed in details. It is the right of the the patient to refuse to give consent for a treatment after knowing all the benefits, risks and the consequences of opting out of the treatment. A physician cannot force a treatment upon the patient and must give due respect to the autonomous decision of the patient. In the present scenario, an informed consent is often taken from the patient or next of kin before proceeding for treatment or procedure but informed refusal is neither taken nor documented, it could be said that it more or less a verbal refusal on the part of patient which doesnot have any legal proof. Such situations lead to law suits against the doctor especially for terminally ill patient. In case the patient is competent enough to make an independent decision of refusal without any interference, the same should be well documented in the designated format of Informed Refusal which should bear details of the procedure (its risks, benefits and consequences of refusal) and signature of patient and two unrelated witnesses like attendants and relatives of any patient admitted.

In case the patient is not in a condition to make decision, the next of kin plays the part of decision making and the same steps should be followed for registration of informed refusal. Even if the doctor knows that the refusal may have deleterious effect on the health of the patient, is bound to hold his services even on humanitarian ground following informed refusal by the patient. Forced treatment or procedure could lead to charges of battery against the doctor and s/he will be bound to face negligence charges.Informed refusal is not just limited to the clinical medical practice but the medicolegal practice also, e.g. a patient with history of physical

Name and Address of the Hospital

Format of Informed Refusal

Patient Name _____

S/O, D/O, W/O_____

Age/Sex _____

R/O _____

UHID No. / Indoor Patient No. / File no._____

Department _____

My physician/surgeon/treating doctor, AIIMS_____, has recommended for myself/my ward the following test/ procedure/treatment_____

S/he explained to me that the potential benefits of the test/procedure/treatment include: _____

And the risks of the test/procedure/treatment are: _____

The physician has explained the following risks associated with not following through with the recommended test/procedure/ treatment. They include, but are not limited to: _____

All the risks and benefits have been explained to me in my vernacular language and despite doctor's recommendation; I am declining to consent to this medical treatment, test or procedure for myself/my ward.

By signing this document, I acknowledge that (1) My/my ward's Medical condition has been evaluated and explained to me by my physician who has recommended treatment as stated above, (2) My doctor has explained to me the potential benefits of such treatment and the risks associated with it, (3) My doctor has explained to me the possible risks of not following through with the recommended treatment, which I fully understand, (4) All the above details have been explained to me in my vernacular language and (5) I have had an opportunity to discuss any and all questions related to the recommended treatment. In spite of this understanding, I refuse and decline to consent to this medical treatment.

Date Time Patient/Guardians Signature (Guardians Relationship)

The patient/authorized individual has read this form or had it read to him or her. Yes/No

The patient/authorized individual states that he or she understands this information. Yes/No

The patient/authorized individual has no further questions. Yes/No

Witness 1 Signature & Address, Phone Number Date Time

Witness 2 Signature & Address, Phone Number Date Time

assault might not give consent for examination due to various reasons like apprehension to file a FIR or negotiation. Under such situations also the doctor supposed to issue Medico legal injury report should take a documented informed refusal from the patient to avoid any controversy in the future. Similarly a sexual assault victim may not be willing to undergo examination or evidence collection due to apprehension or various emotional reasons, so it is the duty of the doctor to either convince the victim or take a documented informed refusal to avoid future accusations. To popularize the doctrine of informed refusal steps should be taken to introduce doctrine of informed refusal in the general practice and academics for future.

Conclusion

The doctor patient relation is based on the care, mutual respect, trust, consent and refusal for treatment. A doctor must respect and should not interfere or manipulate the decision of the patient, though he should counsel and encourage the patient to take the best possible decision for him/her. A medical practitioner must take all the measures and efforts to convince the patient for continuation of treatment even in a terminal stage. The merits and demerits of the medical and surgical intervention must be informed to the patient in his/her vernacular language and in the simplest way without concealing any information. But in case the patient remains unconvinced then the doctor must respect the final decision of the patient, but still provide help and support to the patient in the best possible way. The denial should be documented in writing in a format of Doctrine of Informed Refusal with signatures of compos mentis patient or legal heirs in case patient is underage (< 12 years) or non compos mentis. Informed Refusal is as much important as Informed Consent and a doctor must at all times of treatment record the treatment given, advice, consent and refusal by the patient.

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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

Shilpa S Warad

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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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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

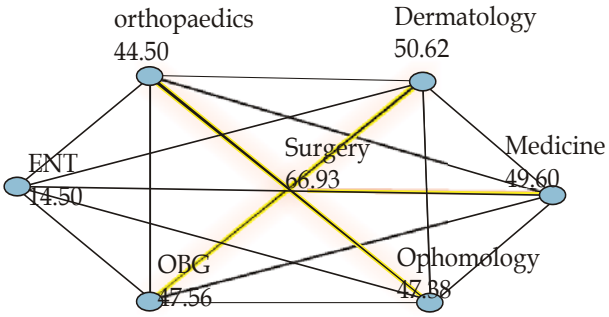
a) The doctor did the Examination with respect.
b) The doctor spent enough time when examining you.
c) Doctor listened carefully to what you said to him and fully understood your concern.
d) The doctor gave you the opportunity to discuss your treatment with him.
e) Did the doctor explain about prescribed 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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Original Article

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Hospital as Healer Role of Colour Culture Architecture Art And Abiotic Fractions In Healing- "A Union Therapy Initiative"

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Abstract

In ancient time religion art science architecture were linked in fact the art science architecture were tools to spread knowledge and beliefs. The hospital itself have covered a journey from temples to bimaritans to modern day hospitals. Hence this supports the fact that the modern hospital setup has religious roots. However the modern health definition advocated a complete physical and mental wellbeing not merely absence of disease and supports the physiological and psychological part. Hence this approach an extension of union therapy imitative tries to integrate the architectural colour and art with the medical and treatment aspect as advocated in past or followed in alternative medicine to improve health outcome.

Key words: Union therapy;Sayojyachikitsa,VIBG YOUR

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Introduction

In ancient Egypt colour had a major significance colours were dedicated to diety like Ra is blue osiris was potaried with green signifying life1. Similarly in ayurveda and astrology planets have colours and siginificane on health.[2] (Tatavarthy et al., 2007)

Colour is property of light. It is referred as a source of energy of different wavelengths which imparts it different colours during its process of absorption and reflection. This is by virtue of vibrations which forms core of everything in universe. This is also been advocated in primitive hermentic principles also that advocate the occult[3]. The body have chakras. And ll organs have their specific vibrations owing to atoms in them. Light also composed of photons and microns. The spectrum of light is huge and even contains a portion which we cannot see with our eye as we have a vision limited to a certain range of frequency which is known as visible spectrum.[4] (Gaurav et al., 2010)

Ancient Links

The light was regarded as a deity in form of its source Sun since the primitive times. There are many cultures and tribes which worship the Sun all round the globe. Owing to this the sun was regarded as god and was prayed for prosperity and even healing purposes. Latter the light emitted by sun was being used as a treatment remedy in Hindu Chinese Egyptian and other ancient civilizations or tribes. Mythological the colour has specific property which possesses behavioural and healing properties on the individual. The colour has a religious aspect also certain colours are regarded as sacred and positive however some are regarded as having negative impacts.[4] (Gaurav et al., 2010)

The use of light and colour in therapy is known as Chromatherapy,a modality of alternative Medicine. In TCM each organ has its unique colour Similarly Egyptians built solarium fitted with colored glass which give light of specific colour and was used for treatment. Avenica also stressed on importance of colors.[4] (Gaurav et al., 2010)

Architecture is the reflection of society. It collaborates every aspect relevant to community. In primitive time science art and technology were assumed the same. In art forms there was a pattern to depict the God. The inner world spirituality and religion was stressed through the art forms It was

a medium of knowledge transfer too. Even the architectural parts lie dams buildings etc were not separated from the pattern of propagation of beliefs and technology. [5] (Asefia et al., 2019)

The art and technology was integrated to cater the needs of the society at that time as it was driven by religious norms hence the glimpse of religious patterns were seen almost in every architecture in past. In addition the religious order was responsible for catering spiritual and social needs of society. The art in architecture was also focused on raising faith of the community in this regard art technology and architecture were blend in a way to enhance faith in the community towards the society norms. (Asefia et al., 2019)

Origin of Find Me Protocol

Hence viewing above two dimensions there is a common link of supernatural diety referred as GOD in both the architectural and color therapy aspect. Hence combining this view gave to a concept of "Find Me Protocol" a concept of union therapy which advocates the use of architectural peculiarities combined with power of color in medical sense as well as its characteristic property sense. To improve health outcomes by influencing the physiological physical health effects of color and architecture in hospitals or health centers. In addition the characteristic property of colors has been utilized for visual impact as well as psychological and mythological impacts thus making color scheme in health centers in a Holistic Pattern which would serve as decoration identification as well as intrinsic healing purpose in a holistic way.

The Find Me Protocol

In this protocol few colors are used to represent a particular department or service in hospital. The color was selected based on its physical property based on its VIBGYOUR pattern which helps in its identification based on visibility status as well as its medical orientation as per chromo therapy compiled with mythological orientation with reference to its faith based implications

Initially the VIBGOUR6 pattern signifying the visibility pattern was stressed in find me protocol to acts as a way finder to a visitor either patient or relative to a specific department was restricted to persons particularly to those who are illiterate and can only differentiate colours and could follow colour strips. A pattern of visibility and colour coding in the Biomedical Waste management 2016 rules was found. Thus it made it easier to amalgamate the two in the premises by using a different shade for find me protocol.

Latter literature review on colours role in health and different cultures led to formulation of a full fledged treatment modality which utilizes architecture skills art and healing properties of the colour to be used in the health facility to make use of all three in providing positive health outcome along with accomplishing other roles of decoration identification and infrastructure.

Functonality

The protocol uses colour which have more visibility as markers of a service like OPD IPD and labour Room, Emergency and OT. The assigned layout has been placed outside the hospital premises. Then the arrow sinages of particular colour are put across the hospital to direct the visitor to a specific service department. It acts as directional cum departmental signage in the hospital.

Conclusion

This protocol is based on union therapy[7] concept given by Kanishk Kala[7] which supports the view that any modality irrespective of origin which gives a positive health outcome should be respected and ought to be implemented synergistically to provide health outcome. Hence this is an effort to amalgamate the architectural specifities to aid in healing as well as function as originally indented. This approach will incorporate the power of chromo therapy along with the parent therapy being practiced in the hospital premises and will be an example of positive utilization of resources.

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Review Article

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Protocol of Handling Bodies of Deceased of COVID-19

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Abstract

Large family of Corona Viruses (CoV) includes viruses which cause Common Cold, Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) etc. A new Corona Virus has been identified which causes severe respiratory symptoms. The virus which was not identified as a human pathogen till December of 2019 has reportedly caused pandemic in more than 100 countries across the world. This virus has been named severe acute respiratory syndrome coronavirus 2 or abbreviated as "SARS-CoV-2". The disease that it is producing is named "Coronavirus Disease 2019" or COVID-19 and the viral strain is termed as nCoV. COVID-19 pandemic break out has created chaos among all societies over the globe, as well as in India. Due to its sudden emergence of this disease there is no standard prescribed methodology for its treatment, management, prevention and handling the dead bodies of the patients who succumb to COVID-19. There is stigma and confusion in the society for safe disposal of infected deceased bodies and also there is hindrance among the funeral workers while accepting such bodies for last rites. Authors have gone through all the available guidelines and have tried to make a stepwise methodology considering the socio-economic conditions and religious believes prevalent in our country which may help the health professionals and relatives who are dealing with the dead bodies of unfortunate victims of this pandemic.

Key words: COVID-19; Dead Bodies; Methodology

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Introduction

Corona Virus family is identified in causing vide spectrum of diseases which are ranging from common cold to severe diseases like Middle East Respiratory Syndrome(MERS) and Severe Acute Respiratory Syndrome (SARS). A new stain was identified in December 2019 at Wuhan, China which has the potential of different manifestations like common mild respiratory tract infection, respiratory distress due to pneumonia, ARDS, renal failure etc. Considering the fast and uncontrollable spread of the decease the World Health Organization has declared COVID-19 as a pandemic. By this time about 6000 persons have succumbed to the new disease all over the globe and about 0.2 million people have tested positive for the virus. Well established treatment protocols, transmission prevention measures are being established. Guidelines for the health care professionals, transporting people, relatives and crematorium attendants who are involved in dealing with potentially contagious corpses of victims dying of COVID-19 are yet to be laid in accordance with available resources, prevalent socio-economic and religious feasibility in different countries including India. As a norm, medico-legal and pathological autopsies should not be carried out on these corpses unless and until substantial grounds are there. If under unpreventable or inescapable circumstances, autopsy is to be performed then strict infection prevention protocols has to be followed and maintained to break the vicious cycle of transmission of disease. This includes cleaning and covering all discharge potential body defects including therapeutic wounds and natural orifices immediately after death, proper packing of body in leak proof body bags, proper transportation of body taking all measures to avoid contamination, proper storage in needed cases, cleaning of all the surfaces which have potential to get in touch with infective body fluids, avoiding the possibility of

relatives and undertakers getting the infection at the place of performing last rites and at crematorium or burial ground. Education of health care professionals and other people who are concerned with taking care of corpses in these cases and the society in large about the scientific methods which can be adopted to prevent further spread of this pandemic is need of the hour in view of authors. All available scientific data are being reviewed to formulate this methodology which is feasible in most of the cases in our country.[1-4] Authors are in view of unfortunate incidents like rejecting the bodies infected with n CoV which was recently reported at one of the crematorium in Delhi should not repeat only because of the lack of knowledge about body handling.[5]

Universal precaution while handling COVID-19 infected dead body

Based on the exposure of infection and the mode of transmission COVID-19 is covered under category 2 of following precaution while dealing with dead body. The following are the specific precaution which should be strictly followed to avoid self infection and transmission of infection.

- Avoid removing body of the deceased from the plastic body bag
- Embalming is strictly prohibited
- It is advisable to cremate the bodies for last rites
- Maintenance of proper hand hygiene
- Maintaining a desirable social distancing.

Packing and transfer of the COVID-19 dead body

- Death due to COVID-19 is a Non Medicolegal Case unless and until contrary is proved.
- The deceased must be placed in a zipped body bag immediately after death with identification tag marked 'COVID-19'.
- Ensure that the body is fully sealed in an impermeable body bag before being removed from the isolation room or area, and before being transferred to the mortuary, to avoid leakage of body fluid.
- Transfer the body to the mortuary as soon as possible after death.
- The Medical/Pathological or Legal Autopsy should be Avoided if there is No Substantial Reason.
- If an autopsy is being considered inevitable, the body may be kept in refrigeration in the mortuary and the autopsy conducted only when a safe environment is available in that mortuary.
- Infected body within 48 hours of death should be stored at a temperature of 6°C or below. If storage is required for a longer period of time i.e. beyond 48 hours then it is advisable to maintain temperature of 4°C. Cold storage should be regularly checked for maintenance of temperature.
- A properly packed and locked body can be safely stored in mortuary for storage and can be sent to crematorium for cremation or burial in a coffin.
- The vehicle used for transporting the body from hospital to mortuary or crematorium should be properly disinfected and decontaminated with 1% Sodium Hypochlorite.
- It should be ensured that the mortuary staff, dealing personnel's and burial team use Standardized International Precautions i.e. maintaining proper hand hygiene, wearing use appropriate Personal protective equipment including long sleeved gown, gloves, facial protection and eye gear to avoid risk of splashes from the body fluids or secretions of dead bodies.[2,3]

Specimens to be collected in case autopsy is unavoidable

Under circumstances when the autopsy is unavoidable especially in undiagnosed cases it is advisable that the following set of specimens be collected:

- Upper respiratory tract swabs: Nasopharyngeal Swab and Oropharyngeal Swab, Lower respiratory tract swab and lung swab from each lung.
- These swabs should be well marked and labeled; for performing tests of other pathogens separate sample should be collected.
- Sample for histopathological examination e.g. lung tissue, upper airways etc can also be kept after fixing it with formalin.

General guidance for workers/employee in Mortuary

Mortuary staff and workers are under high risk of infection and must follow the standard protocol

while handling such category 2 infected cases like COVID-19:

- They must avoid direct exposure of infected nasal discharges, body fluids, blood and surrounding environmental surfaces.
- Minimizing and limiting the number of persons required for conducting autopsy.
- Electric oscillating bone should not be used as it increases the chances of aerosol dispersion; alternatively hand tools or shears can be used for removing bones.
- Once the autopsy is completed and body is safely handed over; and before accepting the next body for autopsy, the autopsy room should immediately be cleaned using 1% Sodium Hypochlorite. All the surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution for a minimum period of 10 minutes.

Personal Protective Equipment for Handling Dead Bodies (PPE)

- Ensure that the dealing person is wearing a waterproof, long sleeved, cuffed disposable gown to avoid contamination from infected body fluids, blood and secretions. In case there is no availability of gown, a waterproof apron should be worn prior to handling the infected dead body.
- Facial shield, eye protection and medical masks should be used properly to avoid any accidental spillage of fluids over the face.
- Proper rubber gloves, closed shoes or boots are to be worn beforehand.
- Once handling of the infected dead body is complete one must follow proper hand hygiene. It is advisable to take bath to further lower the risks of infection and transmission of the same.

Precautions to be taken while Performing Autopsy

In unavoidable circumstances autopsy may be carried out with strict adherence with below mentioned safety measures. Number of professionals should be limited to the minimum as possible. Procedure should be done only in a dissection room which is properly ventilated. It is advised that the professional should wear a scrub dress during the procedure. Disposable surgical gown with full length sleeve which is water resistant is advisable. If it's available, a plastic apron can be worn along with the gown. Preferably N95 mask should be used. Mask with higher specifications are also acceptable. Two pairs of surgical gloves should be worn by each person who is involved in the procedure. Rubber gum boots with knee height is the ideal feet protection during the procedure. All measures should be taken care of to avoid splashing of fluids during dissection especially that of lungs. All the instruments and surfaces coming in contact with body fluids should be cleaned and disinfected with 1% hypochlorite solution with minimum contact time of 10 minutes and the area should be allowed to dry itself. All the PPE should be removed in the dissection room itself and the safe disposal as per biosafety protocol should be followed without any breach. After removal of the PPE proper hand hygienic methods should be followed.

Disposal of Hospital Waste

Waste products of mortuary/hospital procedures in COVID-19 cases should be dealt as risk waste. Every waste product coming in contact with the body fluids should be considered as risk waste and the same should be properly segregated, packed, labelled, sealed and disposed after storage as per the hospital norm for similar products. The health care professional involved in the procedure should make sure the disposal is happening in proper way. Fluids came in contact with the body fluids and be drained to the normal hospital drainage system as in other cases. But it should be confirmed that the water is going to the sewage system and it should not get any access with the ground water. Sharp instruments should be kept with a separate container made for that purpose and the concerned health care professional must make sure about its safe disposal.[6]

Recommendations

Proper hand hygiene measures should be performed by everyone who are at potential risk of coming in contact with infective material. Desirable social distancing is 0.5 to 2 meters to avoid droplet transfer which should be followed in all feasible work places. Face masks have to be used especially while sneezing and coughing. Disposable masks should not be used beyond 24 hours. Considering non symptomatic infected people social gathering should be avoided. Avoid touching mucosal surfaces like mouth, nose and eyes as much as possible. Avoid touching your eyes, nose and mouth.

Performance of Last Rites of Deceased dead body of COVID-19

Once the COVID-19 patient succumbs to death, the medical professionals should hand over the body of the deceased to relatives and friends for last rites assuring that there is no spread of the infection preferably in fluid proof coffin. The methodology to be adopted to make sure that no spread of infection to people who are dealing with the dead body are enlisted below:

1. Handling staff should be appropriately dressed in PPE i.e. rubber gloves, water resistant gown/ plastic apron and surgical mask. Use of eye gear/goggles and face shield to avoid splashes.
2. All tubes, drains and catheters attached to the dead body should be removed before handing over to the relatives.
3. Wound drainage and needle puncture holes should be disinfected, surgically closed and dressed with impermeable material.
4. Secretions in oral and nasal orifices can be cleared by gentle suction if needed.
5. Oral, nasal and rectal orifices of the dead body have to be plugged to prevent leakage of body fluids.
6. Before packing the dead body, it should be cleaned and disinfected using sterilizing agent based on 70% Alcohol or 1% Sodium Hypochlorite.
7. Transfer the body to mortuary at the earliest with body covered in a robust, leak proof zipped transparent plastic body bag which is locked properly using nylon cable zip ties to avoid spillage of any fluids. The plastic body bag should not be less than 150 µm thick.
8. The bagged body should be either wrapped with a mortuary sheet or placed in an opaque body bag.
9. The body bag packing should again be disinfected using the sterilizing agent.
10. Embalming of such bodies should be avoided.
11. Relatives are allowed to view the deceased one last time before last rites after followed standard precautionary measures and unzipping the face end of the body bag.
12. For the purpose of the last rites, cremation should be preferred for the complete elimination of chances of infection in either electric or gas crematorium in situ in a zipped body bag. However keeping in mind the religious views of the family, if the burial of the body is requested, then it should be assured that the body is buried in a thick, air tight coffin and placed at a normal depth of burial (4 to 6 feet). It is recommended that the area above and adjacent to the grave should be cemented immediately as an additional precautionary measure and space should be marked and required precautions should be taken to avoid scavenging by animals.
13. As a precautionary measure large gathering at the crematorium/burial ground should be avoided to maintain a healthy distancing.
14. The remains of the last rites like ashes do not pose any risk of infection and can be collected for religious immersion.
15. Remove personal protective equipment after handling of the dead body. Then, perform hand hygiene immediately.[7]

Conclusions

Considering the high infectivity of the disease, medico-legal autopsies should be avoided in all cases of diagnosed COVID-19. In hospital deaths corpses should be disinfected immediately after death and the hospital staff should make sure that there is no potential fluid discharge point over the body. After disinfection and sealing of wound and orifice, corpse should be kept inside a leak proof plastic body bag to facilitate transportation. If needed, relatives can see the face for last time after unzipping provided all precautionary measures have been taken. Cremation of the dead bodies is the ideal method of disposal of corpses. However, considering the religious believes prevalent in our country, if relatives opt for burial of the deceased it can be accepted under strict precautionary measures. Body remains in the form of ashes after cremation will not possess any infection threat so the same can be used for any kind of religious rituals.

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Review Article

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Preparation and Setting of a Question Paper

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Abstarct

Evaluation is the one of the most troublesome area in education. Written examination is the most widely used method of evaluation and assessment. Most of the times questions are prepared just before the examination and are bypassing the quality check, Which may lead to confusion or misinterpretation of the questions by the students. This article focuses at providing the guidelines and a scientific method of preparing a good question paper to improve the quality of evaluation and assessment of students.

Key words: Evaluation; Examination; Assessment; Question Paper; Quality, Guidelines.

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Introduction

Written examination is the widely accepted tool of evaluation in both formative and summative evaluation. It cannot be replaced entirely by any other method. Written examination leaves a record for revaluation in case of a controversy.[2] While this is not possible in practical and viva voice. The instrument used in the written examination is the question paper. Evaluation is done in two ways: formative(term/sessional) and summative (year end/university).[3] For both methods question paper setting is an important task. The quality of the question paper can be improved by adequate and systematic preparation.

Question Paper Setting/ Preparation

There are seven steps involved in preparing a question paper:

1. Design of the question paper
2. Preparation of a blue print of the question paper
3. Preparation of a model question paper.
4. Preparation of a marking scheme
5. Refining the question paper
6. Editing the question paper
7. Review of the question paper

Design of the question paper

The decision on the design of the question paper is a policy decision, which has to be made by the Dean/Principal of the college / institution. The points to be decided are:

i. Weightage to be given to different forms of questions. i.e how many essays, short answers,or multiple choice questions should be decided to make a balanced question paper. It should be decided on the number of questions in subjects, marks for each type of questions, and the time allotted for the paper. Also the number of sections in each question paper also to be decided.

ii. Weightage to be given to learning objectives and to topics or areas of the subject.

iii. If the objectives are already divided into must know, desirable to know and nice to know categories, the same can be adapted in the question paper. As the term examinations prepare the students to

develop competency in terms of knowledge and skills that is supposed to be acquire by the end of the course, the final examination question paper should not be made very difficult. But the question paper should assess whether the student has achieved the minimal skills and knowledge.

iv. Guidelines regarding the use of options, nature of sections and difficulty level of the paper are also required to be delineated.

Once the above decisions are made, it is advisable to write them in clear and simple terms. Such documents will help at a later period to write instructions to the question paper setters.

Preparation of blue print of the question paper

Blue print of a question paper, is the table of specifications, is a two dimensional chart giving placement of different question (in terms of mark and number) in respect to the objectives or learning outcome, content area and the form of question. Preparation of a model question paper

Table 1: Blue-print of a question paper

Objectives/content area	Knowledge (Recall)					Understanding (Interpretation)					Application (Problem solving)					Skill	Total
	LA	SA	SN	DB	AB	LA	SA	SN	DB	AB	LA	SA	SN	DB	AB		
Cardiology		1					1		1						1		
Oncology			1		1												
Plastic surgery									1								
Neurology		1							1	1							
Disaster			1														
Nephrology	1										1						
Critical care			2														
Geriatrics			1														
Total	1	2	5	-	1	-	1	-	3	1	1	-	-	-	1		

LA: Long Answer SA: Short Answer SN: Short notes AB: Answer briefly DB: Differentiate between

Preparation of a model question paper

The model question paper is written on an item card. A model item card is given below.

Table 2: Model item card

Objective:		Marks:
Content area/Topic:		Estimated difficulty level:
Form of Question:		Estimated time:
Question:		
Model answer	Points of answer	Marks for points

Preparation of marking scheme

Once a model paper has been prepared, the next step is to evolve a marking scheme. The purpose of marking scheme is to assign proportions of marks to different parts of the answer. There are two types of marking schemes- Analytical(objective type and short answer type) and Global(long answer type).

Refining the question paper

After model question paper and marking scheme has been made, a second critical look at the is recommended. While reviewing questions to refine them, the following questions need to be asked:

i. Does the question test an important learning outcome?
ii. Is it based on pre-determined objective?
iii. Is the scope well defined as regards to:
   - Clarity of directions
   - Language of the questions
   - Length of the answers
   - Marking scheme
   - Appropriateness of difficulty level
iv. A question must be relevant to the course objectives.
v. Questions must emphasis on the professional skill and competence.
vi. The questions should not relate to trivial or insufficient, vague and diffuse topics.
vii. Questions on a rare phenomenon or entity does not represent higher learning and does not necessarily judge the practical and professional ability of the student and hence must be avoided as far as possible.
viii. The length of the question paper must be reasonably feasible for an average student to answer within stipulated time.

ix. The mark for each question is predetermined, and it should be proportional to the length and difficulty level of the question.
x. The questions sampled should be such that uniform coverage of the entire curriculum is done.
xi. The language should be clear, and unambiguous, understandable by an average student.
xii. Special care may be taken to avoid spelling or grammatical errors which may cause confusion or even alter the meaning.
xiii. Open ended questions are apt to encourage rambling by a student and it may be difficult to ascertain substance amidst the verbiage.
xiv. Short answer question without a stem or verb do not indicate precisely what the examiner wants.

Editing the question paper

Editing is the next step in the preparation of the question paper. While editing, the following points to be checked:

i. Grouping questions according to the objectives, form of questions,content area etc.
ii. Numbering of the questions
iii. Instructions for administration.

Review of the question paper

The question paper may be reviewed with the help of a check list. the final step is to ensure confidentiality by sending rough sheets to the university or destroying them as per the instructions.

Conclusion

A systematic approach will improve question paper setting in our examinations. The steps involved are plan the design, prepare the blue-print, prepare a model question paper, prepare marking scheme, refine the questions, edit the questions, review the question paper, and final typing / writing and dispatch.

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Legends: Legends for the figures/images should be included at the end of the article file.

If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks from submission. Hard copies of the images (3 sets), for articles submitted online, should be sent to the journal office at the time of submission of a revised manuscript. Editorial office: Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi – 110 091, India, Phone: 91-11-22754205, 45796900, 22756995. E-mail: author@rfppl.co.in. Submission page: http://rfppl.co.in/article_submission_system.php?mid=5.

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The text of observational and experimental articles should be divided into sections with the headings: Introduction, Methods, Results, Discussion, References, Tables, Figures, Figure legends, and Acknowledgment. Do not make subheadings in these sections.

Title Page

The title page should carry

1) Type of manuscript (e.g. Original article, Review article, Case Report)

2) The title of the article, should be concise and informative;

3) Running title or short title not more than 50 characters;

4) The name by which each contributor is known (Last name, First name and initials of middle name), with his or her highest academic degree(s) and institutional affiliation;

5) The name of the department(s) and institution(s) to which the work should be attributed;

6) The name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence about the manuscript; should be mentoined.

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The second page should carry the full title of the manuscript and an abstract (of no more than 150 words for case reports, brief reports and 250 words for original articles). The abstract should be structured and state the Context (Background), Aims, Settings and Design, Methods and Materials, Statistical analysis used, Results and Conclusions. Below the abstract should provide 3 to 10 keywords.

Introduction

State the background of the study and purpose of the study and summarize the rationale for the study or observation.

Methods

The methods section should include only information that was available at the time the plan or protocol for the study was written such as study approach, design, type of sample, sample size, sampling technique, setting of the study, description of data collection tools and methods; all information obtained during the conduct of the study belongs in the Results section.

Reports of randomized clinical trials should be based on the CONSORT Statement (http:// www. consort-statement. org). When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma. net/e/policy/l 7-c_e.html).

Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical details can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

Discussion

Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, What this study adds to the available evidence, effects on patient care and health policy, possible mechanisms)? Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research). Do not repeat in detail data or other material given in the Introduction or the Results section.

References

List references in alphabetical order. Each listed reference should be cited in text (not in alphabetic order), and each text citation should be listed in the References section. Identify references in text, tables, and legends by Arabic numerals in square bracket (e.g. [10]). Please refer to ICMJE Guidelines (http://www.nlm.nih.gov/bsd/uniform_ requirements.html) for more examples.

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Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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