Summer Training Report

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REPORT-1

UNRAVELLING ASSOCIATION BETWEEN COOKING FUEL AND CHILD UNDERNUTRITION IN INDIA: EMPIRICAL EVIDENCE FROM NFHS-2016

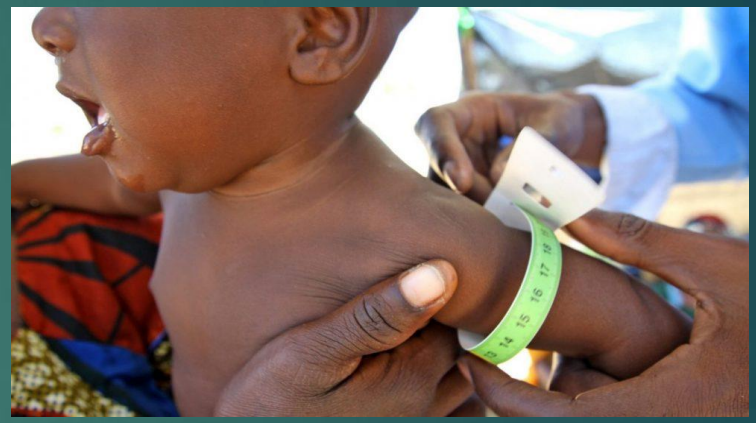
1. INTRODUCTION-

What is undernutrition?

The lack of proper nutrition, caused by not having enough food or not eating enough food containing substances necessary for growth and health (vitamins and minerals). There are 4 broad sub-forms of undernutrition:

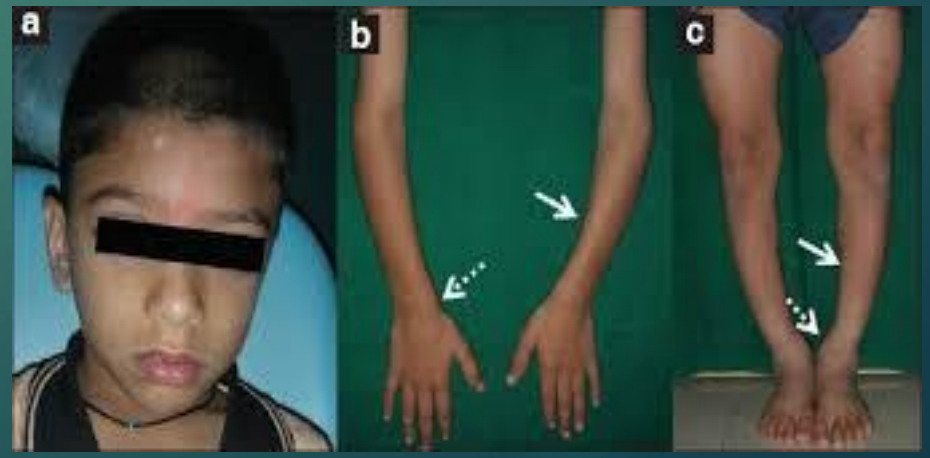
1. STUNTING- low height for age

2. WASTING- Low weight for height



3. UNDERWEIGHT- low weight for age

4. DEFICIENCY OF VITAMINS & MINERALS



CURRENT SITUATION

- Today, around 821 million people sleep empty stomach almost every day, of whom about 135 million suffer from acute hunger globally.
- Globally around 1.02 billion people suffer from undernutrition, 99% of which is covered by developing countries.
- According to FAO estimates in 'The State of Food Security and Nutrition in the World, 2019' report, 194.4 million people (14.5% of population) are undernourished in India itself.
- According to the State of the World's Children report released by UNICEF on October 15, 2019, 22% of under 5 yr. old children belonging to India's richest households are short for their age – or stunted as compared to over half or around 51% from poorer households.

- Although developed nations are already prioritizing food security (to ensure access of food to all) still to provide nutrition safety is also equally important.
- Governments all around the world are trying to provide nutrition sensitive interventions to children to improve their nutritional status but it is imperative to focus on nutrition related factors as well.
- According to recent studies, maternal factors (height, BMI, education) and household socioeconomic and environmental factors (wealth, air quality and sanitation) have the most consistent and strongest association with increased risk of child anthropometric failure.
- WHO says that more than 3 million children under 5 years of age die every year due to poor household environment like polluted indoor and outdoor air, contaminated water, lack of adequate sanitation, toxic hazards, disease vectors, ultraviolet radiation, and degraded ecosystems

GOVERNMENT SCHEMES TO TACKLE UNDERNUTRITION IN INDIA

- Integrated Child Development Services (ICDS) Scheme (by MWCD)
  It provides a package of six services namely supplementary nutrition, pre-school non-formal education, nutrition & health education, immunization, health check-up and referral services to under 6 children and women.

- National Health Mission (NHM)
  The main programmatic components include health system strengthening in rural and urban areas for - Reproductive-Maternal- Neonatal-Child and Adolescent Health (RMNCH+A), and Communicable and Non-Communicable Diseases.

- Mid Day Meal Scheme
  Provides with a hot cooked meal, free of charge every day to children of class 1-8th

- Pradhan Mantri Matru Vandana Yojana (PMMVY)
  The scheme aims to contribute to a better enabling environment by providing cash incentives for improved health and nutrition to pregnant and lactating mothers.

- National Nutritional strategy (by NiTi Aayog 2017)
  Aims to reduce the prevalence of undernutrition in children (0- 3 years) by 3 percentage points per annum from NFHS 4 levels by 2022.

- POSHAN ABHIYAAN (by MWCD)
  It aims to target the unique 1,000-day window of child-birth, pre- and post- delivery support to mothers to reduce malnutrition.

Experts suggest that at least 10 crore Indians will be pushed down the poverty line in India after COVID-19 pandemic

All the government policies and measures have taken a big hit due to the pandemic and pushed us years behind

Will India be able to achieve the SDG goal 2 (Zero Hunger) in time is now the question?

It is important to analyze the current situation with the help of the data available and try to find out the variables which affects the overall health of a child directly or indirectly.

OBJECTIVE- The objective of this study is to examine the prevalence of child undernutrition by household cooking fuel capacity

- Indoor air pollution associated with use of biomass fuels kills nearly one million children annually, mostly as a result of acute respiratory infections.
- This report aims to find out if usage of clean fuel like LPG or biomass has any difference in effect on the nutritional status of the child and is based on data collected from NFHS 2016.
- We aim to find out the prevalence of stunting, wasting and underweight in under 5 population of India.

2. Methods-

In NFHS-4 survey respondents were selected following a stratified 2 stage sampling frame by states and urban- rural areas within each state.

Children with missing observations for age, sex, height, weight and flagged cases were excluded.

The final analytic sample size was 2,25,002 children

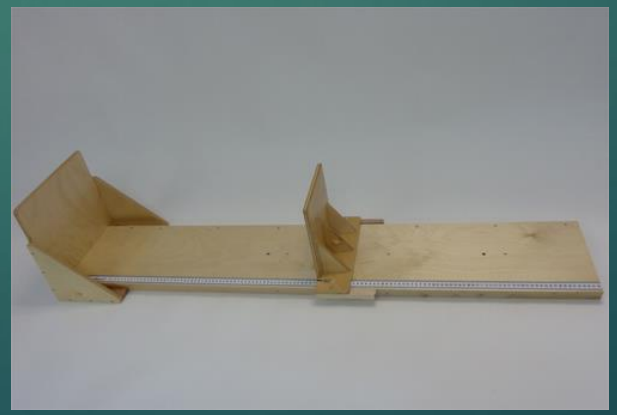
Weight measurement

Using digital solar powered scales

Height measurement

Child<2yrs age

Shorr measuring boards



Child>2yrs age

standing height obtained

Using these height and weight measurements three failure outcomes were constructed.

Stunting	Underweight	Wasting
Retarded skeletal growth due to chronic deprivation measured as height for age z score < 2 standard deviations below WHO child growth standards median.	weight for age z score < 2 standard deviation below WHO child growth standards median.	signaling acute malnutrition defined as weight for height z score < 2 standard deviations below WHO child growth standards median.

Analysis

We tried to study the prevalence of undernutrition in under 5 children based on 2 factors-

Availability of clean cooking fuel and separate kitchen in the household

For better understanding a detailed analysis is done by combining these 2 factors-

- with clean fuel but no separate kitchen,
- with clean fuel and separate kitchen,
- without clean fuel & separate kitchen and
- without clean fuel but with separate kitchen

Finally we have calculated the Prevalence rate along with 95% Confidence interval and Pearson correlation coefficient (r).

3. Results-

Of the total 140,444 households in the final analytic sample,

	Prevalence (%)	95% CI
Clean Cooking Fuel		
Yes	29.1	[28.4; 29.7]
No	19.8	[19.4; 20.2]
Difference - Absolute - Yes - No	9.30	
Difference - Relative - Yes/No	1.47	
Separate Kitchen		
Yes	27.1	[26.5; 27.5
No	19.2	[18.6; 19.5]
Difference - Absolute - Yes - No	7.90	
Difference - Relative - Yes/No	1.41	
Clean Cooking Fuel*Separate Kitchen		
Clean Fuel & Separate Kitchen	31.3	[30.5; 32.1]
Clean Fuel and No Separate Kitchen	23.1	[21.8; 24.2]
No clean Fuel and Separate Kitchen	22.1	[21.7; 22.9]
No Clean Fuel and No Separate Kitchen	17.8	[17.3; 18.4]

- 29.1% had access to clean cooking fuel like LPG
- 19.8 % did not have access
- 27.1% had a separate kitchen
- 19.2 % did not have a separate kitchen

STUNTING

- 15.44% more chances in the absence of clean cooking fuel
- 12.4% more chances in absence of separate kitchen
- Prevalence is highest in absence of both

UNDERWEIGHT

- 14.7% more chances in the absence of clean cooking fuel
- 11.2 % more chances in absence of separate kitchen
- Prevalence is highest in absence of both

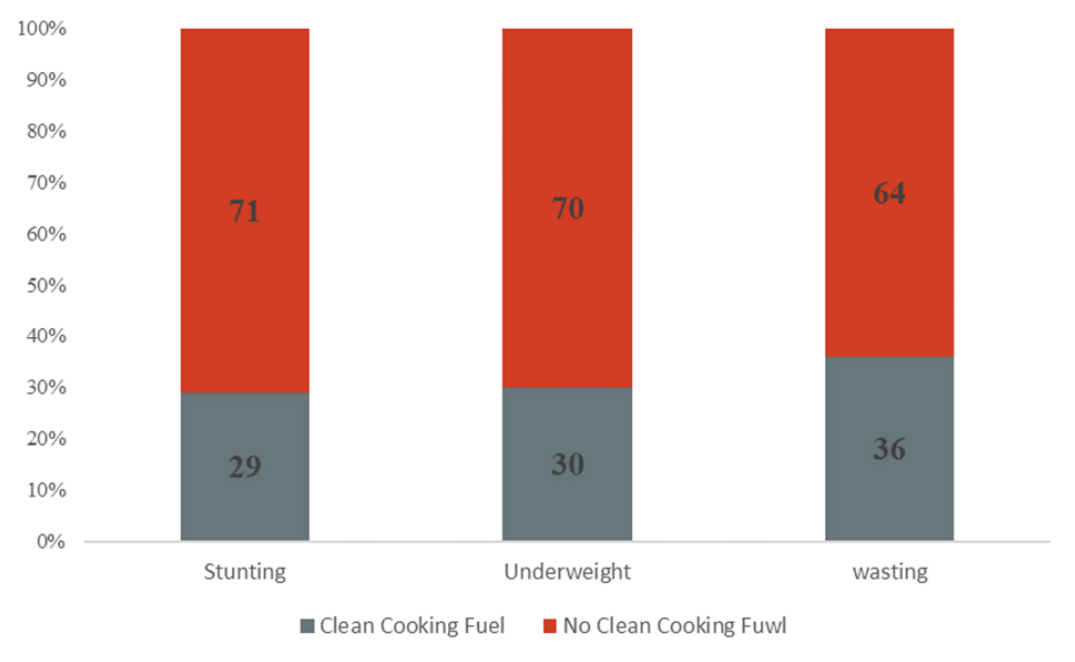
WASTING

- 3% more chances in the absence of clean cooking fuel
- 1.60% more chances in absence of separate kitchen
- Prevalence is highest in absence of both

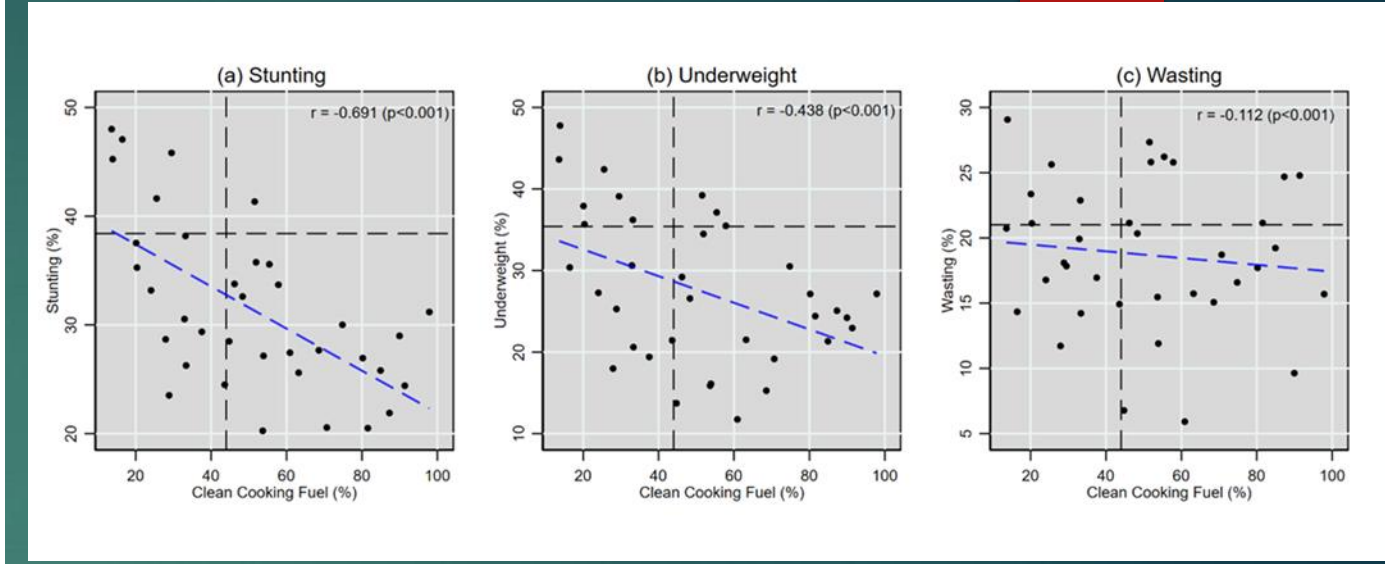
Prevalence of Child Anthropometric Failures by Household's Cooking Fuel, India, NFHS, 2016

	Stunting		Underweight		Wasting	
	Prevalence	95% CI	Prevalence	95% CI	Prevalence	95% CI
Clean Cooking Fuel						
Yes	28.20	[27.8; 28.5]	26.1	[25.7; 26.4]	19.1	[18.7; 19.3]
No	43.64	[43.4; 43.9]	40.8	[40.5; 40.9]	22.1	[21.8; 22.3]
Difference - Absolute - No - Yes	15.44		14.7		3.00	
Difference - Relative - No/Yes	1.55		1.56		1.16	
Separate Kitchen						
Yes	32.3	[32.0; 32.5]	30.3	[29.9; 30.5]	20.3	[20.1; 20.6]
No	44.7	[44.4; 45.0]	41.5	[41.1; 41.8]	21.9	[21.6; 22.2]
Difference - Absolute - No - Yes	12.4		11.2		1.60	
Difference - Relative - No/Yes	1.38		1.37		1.08	
Clean Cooking Fuel*Separate Kitchen						
Clean Fuel & Separate Kitchen	25.9	[25.6; 26.3]	23.9	[23.6; 24.3]	18.9	[18.5; 19.2]
Clean Fuel and No Separate Kitchen	33.9	[33.2; 34.6]	31.4	[30.7; 32.1]	19.8	[19.2; 20.5]
No clean Fuel and Separate Kitchen	39.3	[38.9; 39.7]	37.3	[36.7; 37.7]	22.1	[21.6; 22.3]
No Clean Fuel and No Separate Kitchen	48.1	[47.7; 48.4]	44.6	[44.2; 45.0]	22.6	[22.2; 22.8]

4. Discussion-



Distribution of Stunted, Underweight and Wasted Children by Household's Cooking Fuel, India, NFHS 2016



Scatter Plot showing Correlation between Percentage of Household's with Clean Cooking Fuel and Prevalence of Child Anthropometric Failures across States, India, NFHS, 2016

- Household socioeconomic factor like access to affordable clean cooking fuel has a significant relationship with child anthropometric failure hence this should be kept in mind while planning to achieve better nutrition standards and overall health for all.
- Secondly, availability of a separate kitchen also shows a relationship with child undernutrition.
- Improving environmental factors are promising investments to improve child development.

- Poorer households are more inclined to using solid pollutant fuels
- Many a times there is inability to afford an LPG cylinder especially in rural areas with poor people where about 2/3rd of Indian population resides
- While **Pradhan Mantri Ujjwala yojana**, launched by the government in 2016 provided about 72 million new LPG connections to households, the country's active LPG domestic consumers have almost doubled in the last five years.

But is it enough?

It is important to ensure the sustainability of LPG consumption as well.

How does unclean fuel harm a child's growth?

Cooking with biomass fuel generates smoke and produces high level of indoor air pollution like CO, particulate matter and hazardous pollutants like soot which can result in-

1. Perinatal mortality
2. Reduced birth weight
3. Pulmonary oedema
4. Increased risk of infections
5. Retarded growth

What should be done?

- Policy-makers should consider reviewing the community and national health promotion strategy to reach and constantly educate the population regarding child health, nutrition, balanced diet and preventive measures to exposure to toxic indoor pollutants through mass media and local community meetings.
- Encourage consumption of LPG cylinders over biomass
- Keep children away from exposure to toxic substances and kitchen area while cooking
- Reducing cooking time by use of lids or improved cooking pans,
- Opening doors and windows to allow ventilation in absence of a separate kitchen and LPG cylinder.
- The use of mass media can offer a platform for behavioural modifications and it is easily accessible to all.
- Encourage parents to seek immediate health care attention when the child is undernourished.

5. Conclusion-

- The use of unclean cooking fuel increases the risk of undernutrition (stunting, wasting or underweight) in under 5 children in India.
- Combination of unclean cooking fuel and absence of a separate kitchen makes the situation even worse.
- Spreading public health information on the health risks of using pollutant cooking fuels, economic development, improving house designs, and developing public health policies is likely to make a positive impact on a child's nutritional status and will make his life and country's future healthier.

6. References-

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REPORT-2

ONLINE COURSE

IMPROVING GLOBAL HEALTH: FOCUSING ON QUALITY AND SAFETY

1. COURSE DESCRIPTION

- Globally 57 million people died in 2015 for various reasons like old age, life threatening disease, accidents , or maybe a misdiagnosis, inability to get food, medicine, no money to pay for surgery etc.
- But whenever we plan to make the world a safer place to live, and we choose to work on healthcare, our focus always jumps onto scary diseases like HIV, Tuberculosis or Diabetes.
- No doubt these diseases exert a huge burden on world health and cause a lot of suffering, but there is one more area which needs to be addressed and that is poor performing healthcare system

Approximately 43 million people around the world are injured every year due to unsafe medical care that too in hospitals.

This course presented by Harvard University tries to find out exactly what is going wrong and how healthcare can be the part of the solution and not the problem in order to improve global health.
Improving access to healthcare is only as useful as improving the quality of care provided.

COURSE OBJECTIVES-

1. To study the relationship between quality and population health
2. A framework for understanding and thinking about healthcare quality
3. Understanding global approaches to quality measurement
4. Analysing the role of information and communication technology in assessing and improving quality
5. Study various tools and contextual knowledge to improve the quality delivered in health systems.

COURSE CONTENTS-

A) What is healthcare quality?

B) Safety in healthcare

C) Tuberculosis in India: A case study

D) Measuring Healthcare quality in low- and middle-income countries

E) Surveillance system

F) Role of IT in healthcare

G) Management in healthcare

H) Patient centred care to ensure quality

I) Conclusion

LEARNING METHODOLOGY-

- This is a self-paced course of 10 weeks duration available on edx.
- Various methods of teaching were used in this course by the instructor which includes video lectures, discussion forums, regular quizzes, case studies, final assignment and reading materials.
- Course instructor Ashish Jha from Harvard Global Health Institute invites various eminent speakers from health industry to study and understand global healthcare quality and safety.

1. WHAT IS HEATHCARE QUALITY?

According to the Institute of Medicine, US, healthcare quality has 6 aims i.e.

- **SAFE**: Healthcare, which is intended to help, should not harm the patient.
- **EFFECTIVE**: Providing services based on scientific knowledge to those who could benefit from it and refraining these services from those who would not benefit (Avoiding underuse and misuse)
- **EFFICIENT**: Avoid wastage (manpower, equipment, supplies etc)
- **TIMELY**: Avoiding delays for both the care giver and the receiver
- **PATIENT CENTRED**: Providing care which aligns with the patient needs, preferences, values and involving him/her in all the clinical decisions
- **EQUITABLE**: Providing care which is equal to all, i.e. not varying based on caste, gender or geographic location.

2. SAFETY IN HEALTHCARE

- According to WHO, adverse events due to unsafe medical care is one of the 10 leading causes of death around the world.
- In LMIC, 134 million adverse events take place every year because of unsafe care resulting in 2.6 million deaths.
- The scenario is not very different for HIC where 1 in every 10th patient is likely to have an adverse event and almost 50% of these occurrences are preventable

Most common Adverse events due to lack of proper medical care

ADVERSE EVENT	PREVALENCE	PREVENTABLE
1. Adverse Drug Reaction	7-15%	70%
2. Hospital acquired infections (HAI)	3%	>80%
3. Falls	1%	20-30 %
4. Pressure ulcer	3%	80-95%
5. Surgical complications	2%	50%
6. Deep venous thrombosis (DVT)	3%	70%

- The risk of acquiring a hospital acquired infection is higher in LMIC due to reasons like poor infrastructure, bad hygiene etc.
- Occurrence of adverse drug event is 7 times more common in outpatient setting compared to inpatient setting.

3. MEASURING HEALTHCARE QUALITY IN LOW AND MIDDLE INCOME COUNTRIES-

- The state of overall healthcare quality in India is not good and the reasons may be that the country's bifurcated in two, there's a better-performing south and a worse-performing north.
- In order to study this, they take standardized patients, people who have been trained, and send them off to different medical practitioners eg- middle age man with chest pain.

↓

Turns out, In US 98% times the condition will be diagnosed correctly
But in India only 5% times.
Things still get a little better when we talk about diagnosing right and giving the right treatment, but along with a bunch of others which were not totally correct, as the number jumps up to 40-45%.

↓

The failure may be because of-

1) Lack of knowledge and training to the doctor-
2) The doctor does not put in enough effort-

Since ages, the problem that's been highlighted is shortage of human resources, which is correct to a greater extent but we also need to do a bunch of things to make sure that doctors and the healthcare system work in a way that benefits every patient who comes in.

So, it's not just resources, but it's resources with accountability.

4. SURVEILLANCE SYSTEM

- In the US, and in some other high-income countries, quality-monitoring programs exists. These are basically metrics that are used to make sure the physicians & hospitals, are delivering care of a sufficient quality using a lot of billing data, claims information etc.
- But these things are not readily available in lower income countries.
- How do we begin to create a surveillance program to measure and monitor the quality of ambulatory care in a more systematic way?

One kind of answer has been in finding a set of small, few things that doctors do in every interaction that predicts, or is correlated, or associated with better quality care.

1) Consultation time,
2) Number of questions the doctor asked about your health, and
3) Number of physical exams that he or she did.

Legal system also plays a crucial role in ensuring and monitoring the quality of care being provided in a country in 2 ways-

1. Regulations (pre-set standards which health practitioner should meet to practice) eg- Joint Commission Accreditation and
2. Liability system malpractice (compensate patients for wrongful injuries).

The Affordable Care Act/ Obamacare

- Signed into law in March 2010 in USA
- It was designed to extend health insurance coverage to millions of uninsured Americans.
- The law includes premium tax credits and cost-sharing reductions to help lower costs for lower-income individuals and families.

Patients Self Dialysis unit in Jonkoping, Sweden

- Plan-Do-Study model is used here.
- Patients who are eligible are taught how to perform their dialysis on their own step by step, they do not need to have a nurse to supervise them.
- These patients now let themselves into this building with an electronic card key.
- They come in, they do their own treatments, their own dialysis. They even clean up after themselves and leave.
- This saves hospital waiting time for the patient, and manpower for the hospital staff which can be utilized elsewhere.

5. ROLE OF IT IN HEALTHCARE-

1. Electronic health records-

It is the systematized collection of patient and population electronically-stored health information in a digital format. These records can be shared across different health care settings. It is a better way to organise, protects patient privacy and allows for easy and accurate transfer of patient records when switching hospitals (health information exchange).

2. Telehealth-

Another tool for improving access and improving quality for example, things like teleradiology, being able to send images that can be read by radiologists off site or an eICU when a patient admitted in ICU of a small hospital is managed via telemedicine by a intensive care unit physician sitting in some other part of country or maybe world.

3. mHealth-

The use of mobile and wireless devices to improve health outcomes, healthcare services and health research. With over 67% of the world's population owning mobile phones, mobile phones present an opportunity to expand the reach of medical and public health services to previously unreachable areas

6. MANAGEMENT IN HEALTHCARE-

- Like any other industry good management results in a better performing healthcare industry as well
- Adoption of basic managerial practices and presence of managers with good leadership qualities in the organization results in better performance.
- Middle level managers play an important role as they are closer to the ground level reality. They are responsible for executing the reforms to meet their organization's key strategic and quality improvement objectives.

JIPMER INTENSIVE QUALITY STRATEGY

Under the leadership of Dr. T.S.Ravikumar, JIPMER in India launched an intensive quality strategy including number of initiatives like-

1. JIPMER Quality Council,
2. Continuing Medical Education (CME) credits and
3. Training of the trainer

- JQC Monthly meetings are held every month with Director as chairperson to discuss the previous month activities and to decide the activities to be done in the coming month.
- The group leader not only presents their group activities for knowledge of other members but also get critical appraisal and feedback from them.
- This helps in collective growth and improvement of the entire hospital as a whole.

7. PATIENT CENTRED CARE TO ENSURE QUALITY

- The IOM defined patient-centered care as the care that is respectful and responsive to the patient needs, and perspectives, and values, and ensuring that patient values guide all clinical decisions.
- It's all about improving the communication between physician and a patient, your attentiveness to the patient needs, concerns, and expectations, and your engagement with the patient in the care process.

HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) Survey in USA

- It is an inpatient care assessment tool.
- Since March 2008, all the hospitals-- or the majority of hospitals-- in the United States need to use this valid tool, which contain 32 questions which have some domains about nurses, about physicians, about other stuff that's important to the patient while he's in the hospital.
- All the hospitals have to use the same questionnaire with very strict guidelines how to use this questionnaire and basically, it's creating a benchmark between all the hospitals.
- It enables the patients and their families compare two or more hospitals and to make a decision where to have their care.

HCAHPS Survey

SURVEY INSTRUCTIONS

- You should only fill out this survey if you were the patient during the hospital stay named in the cover letter. Do not fill out this survey if you were not the patient.
- Answer all the questions by checking the box to the left of your answer.
- You are sometimes told to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:

☐ Yes
☑ No → ***If No, Go to Question 1***

You may notice a number on the survey. This number is used to let us know if you returned your survey so we don't have to send you reminders.
Please note: Questions 1-25 in this survey are part of a national initiative to measure the quality of care in hospitals. OMB #0938-0981 (Expires November 30, 2021)

Please answer the questions in this survey about your stay at the hospital named on the cover letter. Do not include any other hospital stays in your answers.

YOUR CARE FROM NURSES

1. During this hospital stay, how often did nurses treat you with courtesy and respect?

1 ☐ Never
2 ☐ Sometimes
3 ☐ Usually
4 ☐ Always

2. During this hospital stay, how often did nurses listen carefully to you?

1 ☐ Never
2 ☐ Sometimes
3 ☐ Usually
4 ☐ Always

3. During this hospital stay, how often did nurses explain things in a way you could understand?

1 ☐ Never
2 ☐ Sometimes
3 ☐ Usually
4 ☐ Always

4. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?

1 ☐ Never
2 ☐ Sometimes
3 ☐ Usually
4 ☐ Always
9 ☐ I never pressed the call button

8. CONCLUSION-

A key component of achieving universal health coverage is ensuring that all populations have access to quality health care.

Examining where gains have occurred or progress has faltered across and within countries is crucial to guiding decisions and strategies for future improvement.

Over the years we have improved our systems, yet much more needs to be done.

THANK YOU

SUBMITTED BY-

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