

Title

Introduction to global health

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HM-24

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Online course report “**Global Health**”

Research Paper “**Knowledge and changing Behaviour towards hand hygiene to prevent from covid-19 transmission in India**”

Course description

This course provides an overview of the most important health challenges facing the world today and how these challenges have changed over time. Global health may include a comparison of health status and programs across countries but is not limited to low- or high-income countries or particular geographical regions of the world.

Global health goes beyond medicine and health sciences and includes a great diversity of disciplines such as political science, engineering, cultural studies, agriculture and many more. It is truly a transdisciplinary area of work. Many issues like climate change, pandemics and protection of refugees, opportunities and dilemmas linked with globalization of health professionals, the expanding health insurance and hospital businesses and increasing health care seeking across borders are the examples of issues that can only be addressed by combining local, national and international actions and governance. Likewise, the increasing international travel will require improved surveillance and collaboration among national authorities to respond to potential spread of infectious diseases.

Overall learning outcomes

- Discuss and demonstrate an understanding of how world income distribution has changed over time and how this impacts global health.
- Demonstrate an understanding of the effects of falling child mortality and fertility on global population growth.
- Discuss and reason about global health trends, including the Global Burden of Disease and its ongoing transition.
- Describe the most common diseases and causes of death worldwide, including prevention and treatment.

- Demonstrate an understanding of how a nation's inequity, policies and level of income determine the health of its citizens.
- Reflect on your own conceptions and perceptions of a world in change with a focus on global health.

Course content

- Global Health Trends
- Sex & Birth
- Child Health
- Infections & Environment
- Non-Communicable Diseases (NCDs) and Injuries
- Cure, Prevent or Promote

Learning Methodology

- This course is discussed by a large number of researchers from different departments and from different countries so to get the overall knowledge about the health.
- This course consists of various modules, each module consists of short video lectures, interaction among different researchers and professors, quiz and discussion.

Course Learning

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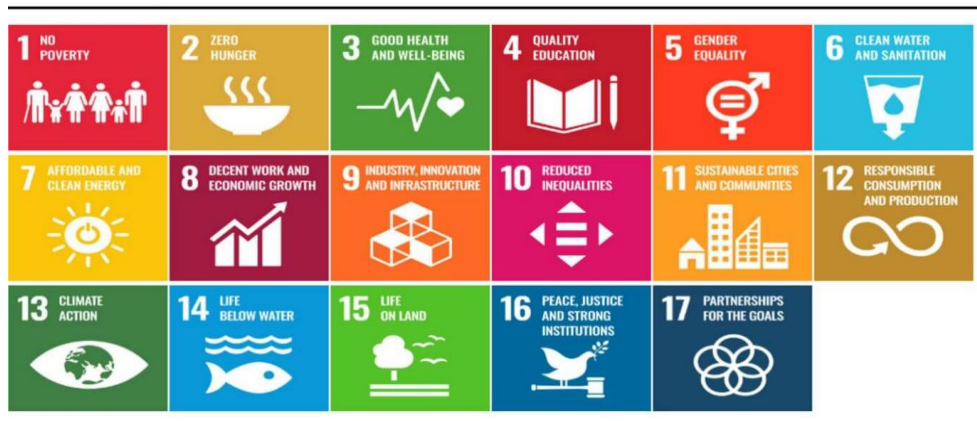
Global health

Introduction, Global health is the health of populations, it is defined as "the area of study, research and practice that places a priority on improving health and achieving equity in health for all people worldwide". In three last few years global health agenda is heavily influenced by the MDG's Millennium Development Goals, in the year 2000, more than 1000 non-government and civil society organization come together to draft a goal to developing countries as to be a better place in 2015 as it was like back in 1990. Not all the goals were reached and the world would not reach the MDG's so a new goal were drafted after a long process and they are called SDGs Sustainable development goals, there are a total of 17 goals and every country in the world reach the 17 goals by year 2030.

Sustainable Development Goals



Millennium Development Goals



Health is measured by health indicator and health determinant

Global health, is how healthy people are in the country is measures using something we call health indicators. Health indicator helps to understand how a population in a country or region is doing. Life expectancy is the most used indicators for the health of a country and income level is the most important determinants for the health status of its population. The highest income has the longest life expectancy, on the high income there is no country with life expectancy below 72 and on low income there is no country with life expectancy above 64.

Health indicators

A health indicator is a measure designed to summarize information about a given priority topic in population health or health system performance. Health indicators provide comparable and actionable information across different geographic, organizational or administrative boundaries and/or can track progress over time.

Examples of health indicators are:

- Life expectancy: how long will a person on an average live in the country.
Life expectancy of India: 68.7 years
- Under 5 mortality rate: is the number of children dying before reaching age year five per 1,000 live births, under 5 mortality rate in the world 2015: 43 child deaths/ 1000 live births. UNICEF report says median under-5 mortality rate per 1,000 live births in India is 37

There are other indicators to measure child mortality in new-borns within their first month of life and infant mortality which measures mortality in infant in the first year of life.

- Maternal mortality ratio: it is the annual number of female deaths per 100,000 live births. MDG 5 indicate Maternal and reproductive health.

The India's maternal mortality ratio is 130/ 100,000 live UNICEF

Health Determinants

Health determinants interact with each other and influence our health status in numerous ways in turn influencing our wellbeing, morbidity, mortality and life expectancy.

Examples of the most important health determinants are:

Income, education, food, water and sanitation, environment and climate change, risk behaviour, access to health services, gender, ethnicity, religion, violence, sexual and reproductive health and rights, human rights, education and other environment factors.

Global Burden of Disease tools

Global burden of disease is measured in DALY disability adjusted life year the disability-adjusted life year is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.

YLL uses the life expectancy at the time of death, YLD is determined by the number of years disabled weighted by level of disability caused by a disability or disease using the formula

$$YLD = I \times DW \times L$$

N = number of deaths due to condition

L = standard life expectancy at age of death

Global Burden of Disease Tools made up of three proportional box, blue, red and green.

**communicable
disease or infectious
disease and also
sickness related to**

**Non-
communicable
disease like heart
attack and cancer**



condition causes
by injury and
disasters

Together these three boxes represent the total **disease burden** of a country. Disease Burden represented by DAILs, according to income of countries.

DALY: Disability adjusted life years, is a measure of the overall disease burden expressed as the number of years lost due to ill-health, disability or early death.

Sex and Birth

Population, today we are 7.8 Billion people in the world.

Where do people live: as world is divided in four regions America, Europe, Africa and Asia, so 1 billion live in America, 1 billion in Europe, 1 billion in Africa and 4 billion in Asia as world population is increasing rapidly and the population union nations say the faster growth will continue by the end of 2100 and we will be more or less 11 billion people in the world. (source Gap minder's answer)

How did the world population change? As back in history, in 1800 there were about six babies born per women and it continued all the up to 1965 and today it dropped down to 2.5.

Maternal Health

Maternal mortality is a risk of a mother to die when she is pregnant, it's the number of maternal deaths per 100,000 live births. Millennium development goals 5th is about maternal health and reproductive health which set us to reduce by 75% and from last 25 years it reduces by 44% as maternal mortality is a bit complicated than other diseases

Cause of maternal mortality

- Severe bleeding after giving birth
- Obstructed labour
- Unsafe abortion
- Infection and abortion complication, which still contributing 8% of total maternal mortality that means 25,000 women are dying every year because of abortion complication mostly because abortion is done in unsafe condition.

Other indirect cause of maternal mortality are:

- HIV
- Obesity
- Anaemic
- Diabetes women who are more likely to die during pregnancy because these conditions are worst in pregnancy and some other causes are socioeconomic determinants.

According to WHO every day approximately 830 women die from preventable cause related to pregnancy and childbirth.

Improvement in maternal as it reduces to 44% from last 25 years, facility delivery started with 25% and later it's up to 90% as the transportation is good, the pregnant women get their delivery done in health care centres and women are much educated about the pregnancy also health care system is strengthen in last few years.

The sustainable development goal number 3 is to "ensure healthy lives and well-being for all at all ages". The first target of this goal is to reduce global maternal mortality ratio by the year 2030, the to less than 70 per 100,000 live birth.

New-born Health

In public health contexts, the new-born or neonatal period relates to children during the first 28 days of life.

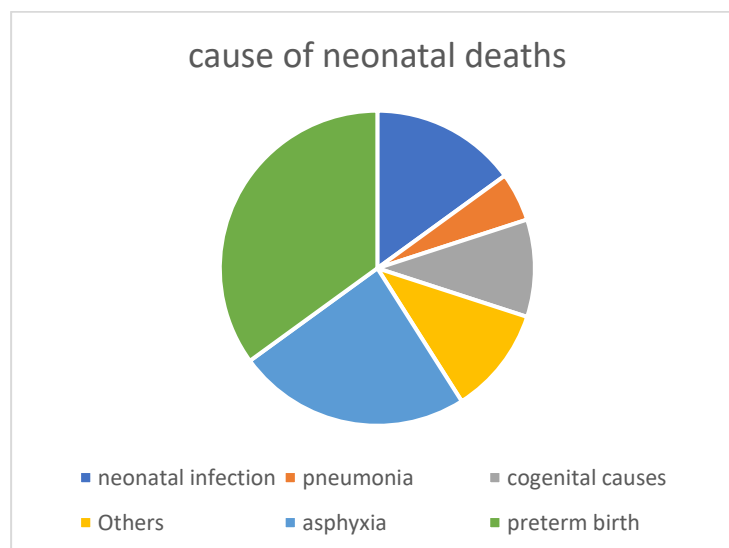
From last decade it dramatically improved in child survival. In 1990 almost 13 million children died every year and to reduces by more than half to 6 million. The improvement is due to an

increasing number of people gaining access to clean water, vaccination, education, nutrition and health care.

According to WHO the cause of neonatal deaths are:

Preterm birth which means being born too early or before the 37th gestation week, every year around 15 million children are born prematurely of which more than one million die so around 35% of children dies due to preterm birth and about 80% of them occurs between 32 and 36 gestation weeks and they can be preventable as they are slightly premature so they do not need high tech intensive care so it can be reduce by 75% only by basic neonatal intervention.

Asphyxia it means the lack of oxygen to the brain and other organ this can be occur before, during or immediately after birth and could damage other organs, about total 24% of new-born dies from asphyxia which means 700,000 new-borns



Child Health

Introduction

Child health and child survival is best improved by a combination of public health interventions better water, better food, better care, better housing and other better health services all together they form protective environment for the health of the child. There are two other factors also which improved the child survival its female education and income level. Nutrition is one the most important health condition, due to pneumonia, diarrhoea and malaria these are three main child killers and effective vaccination can also have a good effect on health of the children.

Nutrition & Growth

Malnutrition is a very important aspect of global health half of the death of under five-year child is associated with malnutrition, reducing malnutrition is central to reducing under five mortality.

Nutrition is defined as the process of providing or obtaining the food necessary for health and growth and malnutrition is lack of proper nutrition caused by not having enough to eat or not eating right thing.

There are three broad different kind of malnutrition

1. Undernutrition: that is to say an energy or protein deficiency.
2. Micronutrition deficiency: not enough of essential vitamins or minerals.
3. Overnutrition: eating more calories than you consume.

Indicators use to measure the nutrition and growth deficiency, different in adult and children

In adult, we have **BMI body mass index** it is calculated as the weight in kilograms divided by the height in meters squared. BMI range below 18.5 – you're in the underweight range. between 18.5 and 24.9 – you're in the healthy weight range. between 25 and 29.9 – you're in the overweight range. between 30 and 39.9 – you're in the obese range.

In children, we have different ways of measuring malnutrition

- **Wasting is the weight for height** if the child's weight for height is low, the child is considered wasted and wasting is the result of sudden or acute malnutrition, when the child is not getting enough calories from the food and faces an immediate risk of death.
- **Stunting is the height for age**, stunting is the failure to grow both physically and cognitively and it result in chronic or recurrent malnutrition.
- **Underweight is the weight for age**

- **Overweight refers to a child who's too heavy for his or her height**, this form of malnutrition results from eating more calories and thus increase in the risk of non-communicable disease such as diabetes, or problem related to heart.

3 Main Child Killers

Pneumonia, Diarrhea and malaria together these diseases cause 1.8 million unnecessary deaths in young children and one third of all child death yearly, to a large extend these are either possible to prevent or to cure.

- **Pneumonia**, Pneumonia is an infection in one or both lungs. Bacteria, viruses, and fungi cause it. The infection causes inflammation in the air sacs in your lungs, which are called alveoli. The alveoli fill with fluid or pus, making it difficult to breathe. It is single largest infection cause of death in children worldwide, pneumonia killed 1 million children under age of five in 2014.

Treatment and Prevention Pneumonia: it is treated by antibiotics and still treatment do not reach more than a third of pneumonia cases, prevented by providing affordable clean, indoor stoves and encouraging good hygiene in crowd homes reduce the number of pneumonia cases. In recent years, in addition to vaccination against measles and whooping cough the new vaccine again Hib pneumococcus have become most effective way of preventing some forms of pneumonia. Children which malnutrition are at high risk of developing pneumonia especially infant who are not exclusively breastfed.

- **Diarrhea** disease is second leading cause of death in children under five-year-old and is responsible for killing around 600,000 children every year. Diarrhea can last several days and most people die from severe dehydration and fluid loss. Children with malnutrition are at risk of life threatening diarrhea.

Transmission of Diarrhea: Diarrhea infection is spread through contaminated food or drinking water or from person to person as a result of poor hygiene.

Treatment of Diarrhea: Oral rehydration therapy is seen as one of the most important medical advances in the 20th century, ORS is a mixture of clean water, salt and sugar. Zinc supplementation also reduce the duration of diarrheal episodes by 25% and also associated

with a 30% reduction in stool volume and Additionally, in children it is important to continue breast feeding and if ORS is not available just increase fluid of any kind.

Diarrhea prevention:

- access to safe drinking water
 - improved sanitation,
 - hand wash with soap,
 - exclusive breastfeeding for the first six months of life
 - health education
 - Good personal and food hygiene
 - Rotavirus vaccination
- **Malaria**, in 2015 alone, there were an estimated 20 million new cases of malaria. About 3.2 billion people almost half of the world population is at risk of malaria some countries are most affected and 15 countries mainly in Sub-Sahara Africa accounts 80% of malaria cases globally.in Africa child dies every minute due to malaria especially those living in poorest and remote areas.

Malaria transmission: malaria is transmitted by mosquito, about 20 different so-called anopheles species exist around the world, anopheles mosquito breed in water and specially they bite at night, and transmission depends on climate condition with the peak during and after the rainy season.

Children with severe malaria frequently develop very severe anemia, respiratory distress and cerebral malaria, early diagnosis and treatment is therefore very necessary to reduce disease and prevent deaths.

Malaria prevention

- Mosquito control
- Long lasting insecticide bed nets
- Indoor residual spraying

Vaccination

Immunization or vaccination is one of the best public health interventions available to save the lives of children every year, vaccination or immunization work by stimulating the immune system. The healthy immune system is able to recognize invading bacteria and viruses and produce antibodies to destroy or disable them immunization the initial immunization process, it has been found that the effectiveness of immunizations can be improved by periodic repeat injections or boosters. Routine immunization is the backbone of a high coverage all opportunities to vaccine a child must be seized, that is every time a child visit health centre, their vaccine status should be checked and scheduled if any of them is lacking.

Effect of vaccine on measles: Measles mortality worldwide has decreased by 75% in the last 15 year mainly due to hight vaccination courage. Currently, about 85% of all children get at least one dose of measles vaccine, measles is a highly contagious disease caused by virus resulting in high fever and rash and can lead to brain infection and death and many complications of bacterial infections. Two dosage of measles vaccine can protect 99% protection.

Vaccine works and they save lives as example of India the amazing effect in the vast country and it saves lives and also the health care resources saved that can now be used for other illnesses. India was declared polio free in 2012 in august 2015 declared free from maternal and neonatal tetanus a major achievement.

Improvement in global vaccination from the last decade there's an improvement in global vaccination courage, in 2004 almost 20 million infants worldwide were not reached routine immunization services due to poor management of health system and inadequate monitoring and supervision. Priority needs to be given to strengthen routine vaccination globally and particularly efforts are needed to reach under served especially in remote areas. It took all of the 80's and 90's to take the world from 17% to above 80% coverage all the most important vaccines the old new in the last decade several new vaccine have been developed, GAVI Global Alliance for vaccine initiative was established and with the support of GAVI and UNICEF introduction of new vaccine has been done at a tremendous speed. The vaccine includes Rotavirus vaccine and pneumococcal vaccine both are important to save lives of young children.

GAVI (Global Alliance for Vaccine Introduction) is a global health partnership of public and private sector organizations dedicated to "immunization for all". It was founded in 2000 and brings together governments from donor and recipient countries to increase equal access to new and underused vaccines for children living in the world's poorest countries

Infections & Environment

Water, Sanitation and Hygiene (WASH)

Hand washing is the single most cost-effective health intervention that we know as of now. And we are now we are more aware of hand washing as it is one of the most important preventive measure in transmission of corona virus.

Just simply by hand washing with soap and water can reduce diarrheal diseases by 50% and respiratory disease by 25%. WHO estimates that for every dollar invested is improved water and sanitation, you get \$5 back in reduced health care costs, for 1\$ invested in water and sanitation you get \$5 back

Every person needs 15 to 20 liters of water per day for drinking, cooking, hygiene and washing. Water needs to be safe, clean, affordable and closed by. Still today, according to WHO and UNICEF almost 700 million people that's every 10th person on this planet lack access to improved drinking water sources and improved drinking water means protecting from contamination.

Sanitation, do you know there are still one billion people in the world who practice open defecation, with open defecation the risk of bacteria or germs transmission increase from person poo and can cause several illness thought, open defecation has decreased by half from 1991 it was 25% to about 13% in 2015. There's billion of people who practice open defecation because they don't have access to latrines or have improved sanitation. And if they practice good sanitation and have an access to improved toilet can avoid disease transmission.

And with improved toilets you will get more girls in school if they have somewhere safe to go to toilet and in India our prime minister Modi also talked that if we have separate toilets for girls then it can reduce the number of rapes. As of Feb. 01, 2019, the Modi government claimed to have constructed 9.2 crore toilets. It declared 5.5 lakh villages and 28 of India's 36 states and union territories had become open defecation-free. Proper sanitation is needed to stop developing new diseases and to prevent the spread of any kind of disease. Not poor sanitation can only cause disease in human but it also has a heavy burden in environment.

It is estimated that almost one million people die every year because of inadequate water, sanitation and hygiene. The vast improvement in water, hygiene and sanitation that has actually been seen since 1990 means that the number of children dying from diarrheal disease has decreased from 1.5 million per year to 600,000 per year. There's still a long way to go.

HIV

HIV is a virus that attacks a type of white blood cells so called T cells or CD4 positive cells. These cells are important coordinators of our immune system.

HIV is the virus, while AIDS, Acquired Immune Deficiency Syndrome, is when a person gets sick as a consequence of weak immune defence caused by HIV. If someone reached the stage of AIDS then they can be saved through combination ARV treatment. HIV was discovered in the mid 1980s and since then, 70 million people have been infected and over 34 million people died from AIDS and today 37 million people are living with HIV in the world, many survive because of the rapid increase in access to antiretroviral drugs or also called ARVs over the past decade and 22 million people lack treatment for children. The situation is even worse: less than one out of four children with HIV are in treatment. Overall, this lack of treatment leads to 4000 AIDS deaths every day. About 15 million or above 40% of those living with HIV have access to these HIV drugs. And also, the number of infections has dropped by 35% over the last 15 years, but 5500 people still get newly infected with HIV every day.

HIV Spread: it can be spread by our body fluid such as blood, genital fluids, sperm and breast milk, unsafe blood transfusion through used infected equipment like needles. The risk of transmission depends on the amount of virus in the person infected with HIV.

UNAIDS has set ambitious goals called 90-90-90 a strategy to increase the number of people who know they are infected with HIV; to increase the number of people receiving treatment also having viral suppression. To reach these targets by 2020, we need to scale up HIV efforts. We need to be more innovative and creative and reaching out with the knowledge we already know HIV prevention.

UNAIDS is the Joint United Nations Programme on HIV and AIDS and is the main advocate for accelerated, comprehensive and coordinated global action on the HIV/AIDS epidemic.

Tuberculosis

As many as one third or more than 2 billion people of the world's population may be infected by tuberculosis mycobacterium. But only small proportion less than 10 percent of these, actually develop the disease during lifetime.

Every year about 9 million people fall sick with TB and 1.5 million people die that means 4000 people dies every day.

Those infected with both TB and HIV have much highest risk of dying from one of these diseases. Over 95% of TB deaths occur in low- and middle-income countries however the good news is the mortality rate actually decline by 45% over last 2 and ½ decades.

TB prevention

- Vaccination (BCG)
- Case finding is systematic screening and clinic

Treatment of Tuberculosis is long and usually involves at least four different oral drugs in the beginning most need to be in a daily treatment of six month but for some with antibiotic resistance tb the treatment can be even long and can be up to two years.

WHO launch stop Tb and DOTS Directly Observed Treatment Shout course, DOTS build on five health system components

- Government commitment
- Ensuring drug supply
- Proper diagnostic
- Proper recording
- Health worker observed intake of the medicine

The most recent WHO strategy is the post 2015 global TB strategy, its goal was to reduce the death by 95% and new cases by 90% over the next 20 years.

Non-Communicable Diseases and injuries

Non communicable diseases are:

- Cardiovascular disease, also known as CVD it is the biggest group of non-communicable disease and vascular disease mainly of the brain stroke. Heart attack and stroke are responsible for about 1/3 of all the death in the world
- Cancers kills about 15%
- Diabetes which is about the hormones in the body it kills only about 2% many patients with diabetes are still undiagnosed.
- Disease related to lungs which include asthma and bronchitis ad it kills about 10%
- Mental illness
- Injuries
- Disasters
- Hypertension can be counted as both disease and risk factor for heart attack and strokes, it is estimated that the biggest cause of death in the world for men and women and it is on the rise.

In total main non-communicable disease caused about 60% of all death in the world. NCD are chronic disease such as diabetes cannot be cured but it can be treated with daily insulin rejection or pills so that the person with diabetes can live an almost normal.

There are poor countries with infectious disease and rich countries with non-communicable diseases but cardiovascular disease and cancer are also common in the poorest countries because from the low-income group to middle income group they started eating unhealthy food. Risk of getting non-communicable diseases is with age.

Mental health

Mental health is a state of wellbeing which lets a person live a free and fruitful life and take part in society.

Global burden of disease, measures in DAILY disability adjusted life years.

- **Blue-** mental disorders depression, the biggest contributor anxiety disorder, drug use disorder, schizophrenia, alcohol use disorder, autism spectrum disorder, intellectual disability and others.
- **Green-** injury burden by suicide

Probably these two blue and green represented about 8% to 9% and around 8.5% of them are underestimated.

Additional burden from mental disorders:

- Mental disorder may increase unhealthy lifestyle as you may have less interest in exercise and you may consume alcohol or tobacco because of increased anxiety.
- Side effects from medication such as increase the risk of weight and diabetes.
- Less help-seeking/ treatment for other diseases and it's difficult to follow the medication.
- Discrimination, less support and treatment by society in general the stigma and discrimination associated with mental health has negative impact on the lives of people with mental illness.

Injuries and Disasters

Injuries

Every year around 5 million people die due to injury which makes up about 10% of all the deaths in the world. The type of injuries differs substantially between low, middle- and high-income countries, as in a high-income country is an old person dying after falling and while in low income setting young male dying in a traffic accident.

Injuries can be divided in:

- Unintentional:
 - Traffic- Around 1.3 million people die per year that is two every minute and for every person dying in a traffic accident, another 20 individuals are seriously injured.
 - Fires and Drowning are most common in low income countries and can lead to number of deaths.
- Intentional:
 - Violence and self-harm globally they stand for only 2% of deaths but mainly in women between 15 and 19 years old self harm can be a common cause of death.

Disaster

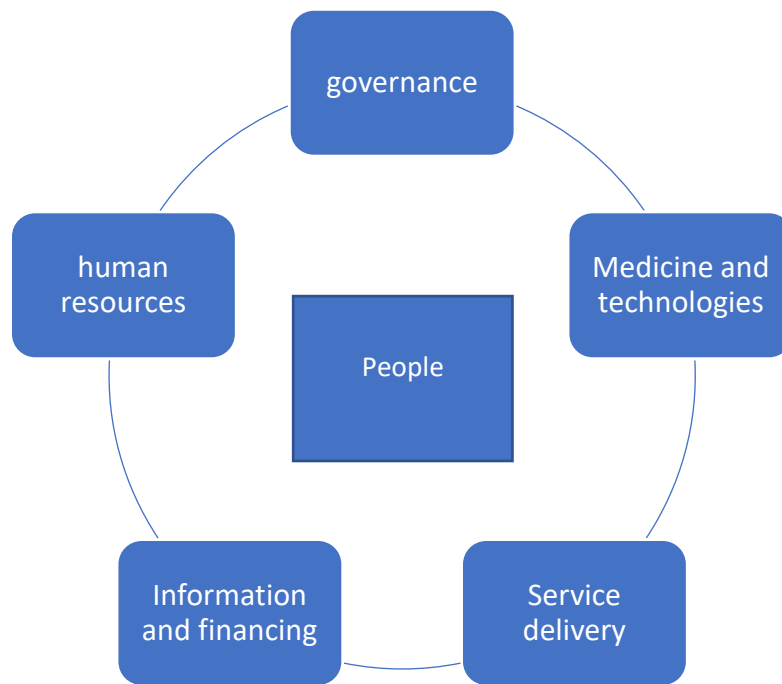
Disaster can also harm many people's life, disaster can be natural, man made or mixed. Disaster affect close to 500 million people in many low- and middle-income countries every year. Around 300 million people live in situation of violence insecurity and conflict and around 200 million are annually exposed to the effect of natural disaster the majority live in Asia, flooding is the most common type of natural disaster and also affect most people suffering caused by disaster goes beyond the number of dead and injured.

Health system, Health policy and innovation

Health system: define as all those activities done in a country that are primarily intended to improve the health of the population. It consists of health services, everything from health centre to advanced hospital. People health activities that prevent diseases, rehabilitation services that helps people come back to a normal life and also promote health activities so that it may not lead to any unhealthy condition and other components jointly compose the health system of country.

Health policies that is all about making decision based on evidence that is research about what should be done in health system. So that whole population need universal health coverage.

WHO created systems thinking building blocks



Models of organizing care- service delivery

- Primary basic immediate health problem
 - Secondary more specialized clinical care
 - Tertiary care: hospitals, management of rare and complex disorder

Mechanism of financing

- General revenue or earmarked taxes
- Social insurance contributions
- Private insurance premium
- Community financing
- Direct out of pocket payment: 80% comes from out of pocket with the risk that healthcare result in poverty.

Health policies

UHC Universal Health Coverage: The goal of universal coverage is to ensure that all people obtain health service they need. This is given by director general of WHO, Margaret Chan

- Prevention, promotion, treatment, rehabilitation and palliation

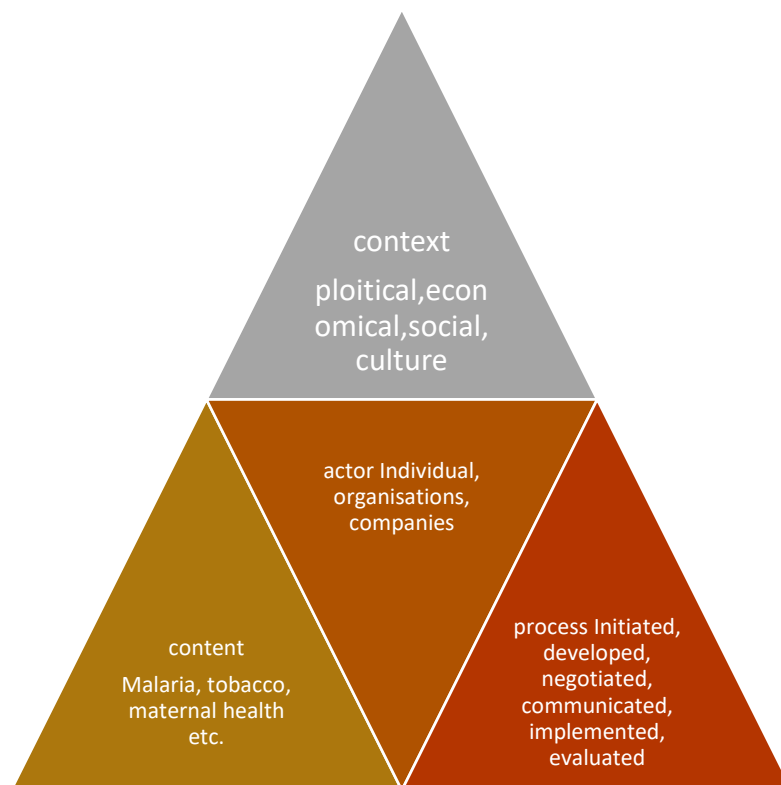
- Without risk of financial ruin or impoverishment

Health policy definition: Policy is a broad statement of goals, objectives and create framework for action.

Health policy model

- Rationalist model
- Incrementalism model
- Walt's stages model is trying to understand health policy with the steps:
 - problem identification
 - policy formulation
 - policy implication
 - policy evolution

Policy Analysis triangle



Research Paper

Knowledge and changing Behaviour towards hand hygiene to prevent from covid-19 transmission in India

Abstract: Hand hygiene is one of the most used method to protect against acute respiratory infection, measure to prevent transmission of coronavirus disease 2019 (COVID-19). A cross- sectional study was used to identify the knowledge and changing behaviour toward hand hygiene in India. The behaviour according to gender, residence, educational background is significantly associated with the knowledge of Coronavirus pandemic and hand hygiene. As hand hygiene can produce significant benefits in terms of reducing the transmission of infection, mostly respiratory infection and gastrointestinal infection and its one of the inexpensive methods to prevent transmission.

Background: Hand hygiene is important preventive measure to protect transmission of COVID-19. This study aim is to better assess the knowledge and behaviours associated with the use of hand washing to prevent and transmission of corona virus during the pandemic in India.

Methods and material: to determine the changing behaviour of the population, through google questioner a survey was conducted, each with n=96 participants in India between 12th May 2020 to 31th May 2020, survey was carried out during the pandemic in India. The questionnaire includes semi- structured questionnaire regarding individual education background, knowledge about the pandemic and behaviour regarding hand hygiene for the prevention and transmission of novel corona virus India.

Results: The proportion of people who perceived the efficacy of hand washing is significantly increased and also increase in number of times they wash their hand now and a year ago.



Conclusion: Hygiene promotion is considered a crucial public health activity not only in pandemic situations but also in perennial infection control and as WHO suggested hand hygiene is important to prevent the transmission of COVID- 19. Hand hygiene and behaviour education are remarkably beneficial in preventing infectious diseases. Gender, Residential area and educational backgrounds play an important role in changing behaviours about the hand hygiene.

Key words: Hand hygiene, COVID-19, pandemic, knowledge, hand washing

Introduction: COVID-19 or coronavirus disease 2019, it refers to an outbreak of acute respiratory infection caused by a novel coronavirus. It was first identified in the city of Wuhan, China has rapidly crossed borders, infecting people throughout the whole world. Due to the strong human-to-human transmission power of coronavirus disease now it has been pandemic all over the world and on March 2020, the WHO (World Health Organization) declared the COVID-19 outbreak a global pandemic and all countries were urged to undertake effective measures for reducing transmission. Hand hygiene measures are recommended by health authorities and public health experts worldwide to interrupt these transmission mechanisms by preventing viral transfer via contact with infected people and surfaces

No specific treatment and vaccination are available for coronavirus disease, public health action can help in slowing the transmission of coronavirus pandemic, by practicing good hand hygiene by frequently hand wash with water and soap or by alcohol-based sanitizer. World Health Organization (WHO) provide guidelines that one of the ways to reduce the risk of transmitting infection is by regular and thoroughly cleaning one's hands with soap or alcohol-based sanitizer. Regular practising good hand hygiene is important as

the virus tends to be viable from hours to more than a day on different surface that are regular with hands. Evidence from the literature showed that frequent hand-washing would reduce the risk of viral transmission by 55%. During severe acute respiratory syndrome (SARS) pandemic, hand washing was proved to be effective in blocking transmission.

Effective handwashing technique as to prevent transmission of covid-19.

Step 1: Wet hands with running water

Step 2: Apply enough soap to cover wet hands

Step 3: Scrub all surfaces of the hands – including back of hands, between fingers and under nails – for at least 20 seconds.

Step 4: Rinse thoroughly with running water

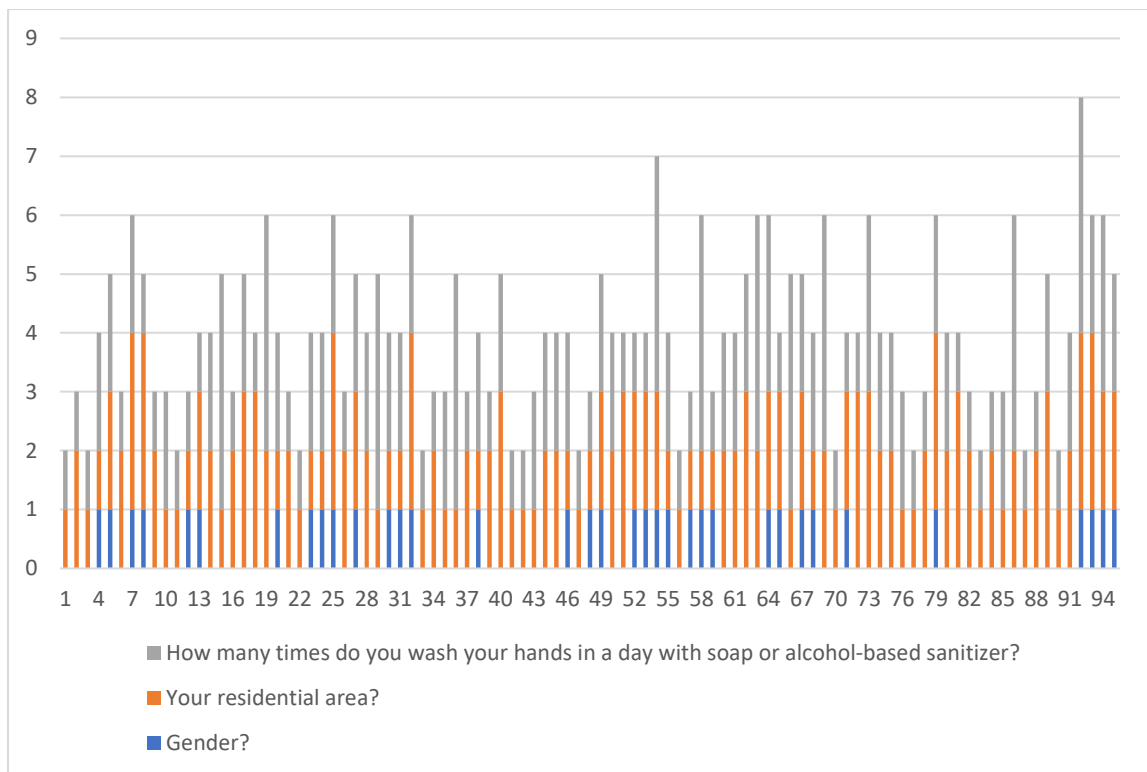
Step 5: Dry hands with a clean cloth or single-use towel

Washing hands with soap and water is the best way to get rid of germs in most situations. If soap and water are not readily available, you can use an alcohol-based hand sanitizer that contains at least 60% alcohol.

Aim and Objective: The aim of this study was to determine individual knowledge about the pandemic COVID-19 and changing behaviour towards hand hygiene for the prevention and transmission of corona virus disease 2019 in India.

Analysis:

This graph indicates the according to gender and residential area how many time people wash their hand with soap and water and alcohol-based sanitizer.



This analysis shows how according to gender people aware about the hand hygiene as a preventive measure.

ANOVA

				Sum of Squares	df	Mean Square	F	Sig.
Preventive Measures	(Combined)			.004	1	.004	.182	.670
	Between Groups	Linear	Unweight ed	.004	1	.004	.182	.670
		Term	Weighted	.004	1	.004	.182	.670
		Within Groups			1.952	88	.022	
	Total			1.956	89			
Awareness about Hand Wash	(Combined)			.111	1	.111	1.536	.219
	Between Groups	Linear	Unweight ed	.111	1	.111	1.536	.219
		Term	Weighted	.111	1	.111	1.536	.219
		Within Groups			6.345	88	.072	
	Total			6.456	89			
Advice Others	(Combined)			.497	1	.497	5.747	.019
	Between Groups	Linear	Unweight ed	.497	1	.497	5.747	.019
		Term	Weighted	.497	1	.497	5.747	.019

Wash Hand with Sanitizer	Within Groups			7.603	88	.086		
	Total			8.100	89			
	(Combined)			.345	1	.345	.504	.479
	Between Groups	Linear Term	Unweight ed	.345	1	.345	.504	.479
				.345	1	.345	.504	.479
	Within Groups			60.155	88	.684		
How long Wash Hand	Total			60.500	89			
	(Combined)			.235	1	.235	.799	.374
	Between Groups	Linear Term	Unweight ed	.235	1	.235	.799	.374
				.235	1	.235	.799	.374
	Within Groups			25.865	88	.294		
	Total			26.100	89			

Correlations

		area	AwarenessA boutHandWa shing	GoOutside	WashHandWithSan itizer	Wa
area	Pearson Correlati on	1	-.125	.214*	.091	
	Sig. (2- tailed)		.231	.038	.384	
	Sum of Squares and Cross- products	46.6 38	-2.170	4.553	5.064	
	Covarian ce	.501	-.023	.049	.054	
	N	94	94	94	94	
	Pearson Correlati on	-.125	1	-.150	-.009	
AwarenessAboutHandW ashing	Sig. (2- tailed)	.231		.147	.934	

GoOutside	Sum of Squares and Cross-products Covariance	-2.170	6.484	-1.189	-0.179
	N	94	95	95	95
	Pearson Correlation	.214*	-.150	1	-.084
	Sig. (2-tailed)	.038	.147		.419
	Sum of Squares and Cross-products Covariance	4.553	-1.189	9.726	-2.147
	N	94	95	95	95
	Pearson Correlation	.091	-.009	-.084	1
	Sig. (2-tailed)	.384	.934	.419	
	Sum of Squares and Cross-products Covariance	5.064	-.179	-2.147	67.305
	N	94	95	95	95
WashHandWithSanitizer	Pearson Correlation	-.028	-.059	-.042	.533**
	Sig. (2-tailed)	.792	.567	.683	.000
WashHandOneYearAgo	Sum of Squares and Cross-products Covariance	4.553	-1.189	9.726	-2.147
	N	94	95	95	95
WashHandOneYearAgo	Pearson Correlation	-.028	-.059	-.042	.533**
	Sig. (2-tailed)	.792	.567	.683	.000

SanitizerHelpsBlocking	Sum of Squares and Cross-products Covariance	-				
	N	1.426	-1.168	-1.021	33.758	
	Pearson Correlation	-.015	-.012	-.011	.359	
	Sig. (2-tailed)	.94	.95	.95	.95	
	Sum of Squares and Cross-products Covariance	-.133	.114	.085	.065	
	N	.201	.271	.411	.532	
	Pearson Correlation	-				
	Sig. (2-tailed)	1.979	.632	.579	1.158	
	Sum of Squares and Cross-products Covariance	-.021	.007	.006	.012	
	N	.94	.95	.95	.95	
HowLongWashHand	Pearson Correlation	.001	.020	.010	.195	
	Sig. (2-tailed)	.991	.848	.925	.058	
	Sum of Squares and Cross-products Covariance	.043	.263	.158	8.316	
	N	.000	.003	.002	.088	
		.94	.95	.95	.95	

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

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

Discussion: Hand hygiene is important element of infection control. Previous studies have confirmed the effect of hand washing on communicable disease and approximately hand washing could break the transmission cycle and reduce the risk between 6% to 44%. As hand washing is inexpensive and widely available protective measure for every individual

and it is protective measure for both personal and epidemic prevention of some viral infection like influenza, SCAR as hand washing is the main important measure to prevent transmission of COVID 19.

Study shows that there is significantly change in the habit of hand washing as people are aware about the pandemic and know how important is hand hygiene to prevent transmission.

Conclusion: As in the study 64.5% female and 35.5% male participated of different residential area, where 100% people are aware of global pandemic COVID 19 and all of them are taking preventive measure and only 92.6% are aware that hand washing is important to prevent the transmission of COVID-19.

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