

SUMMER PROJECT REPORT (PART I)

Literature review on the status of Diabetes control programme in Kerala

By

Dr Surbhi Gandotra

MBA Hospital and Health Management

Academic year, 2019-2021



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport Jaipur
302029, Rajasthan

Ph: 0141 3924700, Fax: 3924738

Website: www.iihmr.edu.in

Acknowledgement:

Learning about the public health framework and getting acquainted with the research done on the ground level to overcome the public health challenges has always been an interesting concept for me and luckily I got the chance to work on these areas with such a prestigious institution “IIHMR University”.

I would like to extend my heartfelt gratitude to my college mentor Dr Alok Mathur for helping me throughout this journey of gaining more exposure in the field of public health.

I would also like to thank my parents and friends for helping me through these tough times and giving me much motivation to work towards my goal.

TABLE OF CONTENTS

Literature review on the status of Diabetes control programme in Kerala

CHAPTERS	PAGE NO.
1. AIM	5
2. OBJECTIVES	5
3. METHODOLOGY	5
4. INTRODUCTION	9
5. KEY FINDINGS	14
6. CONCLUSION	16
7. RECOMMENDATIONS	17
8. REFERENCES	18

Abstract

Introduction: Diabetes is a major global health problem that has shown high prevalence in the developing countries like India. Among the Indian states Kerala has shown highest prevalence of diabetes compare to the national average which makes it the *Diabetic capital of India*. Considering the high non communicable disease burden National Programme for Prevention and Control of Diabetes, Cardiovascular Disease and Stroke was launched across India states including Kerala and state level Amrutham Arogyam programme for in Kerala for prevention of lifestyle diseases. However not much impact is seen in terms of reduction of diabetes in Kerala despite these programmes.

Objectives: The objective of the study is to interpret the implementation of Diabetes Control programme in Kerala, identify the impact of the programme and to give recommendations to reduce diabetes in the state of Kerala.

Methodology: Secondary data is collected from systematic review of key literature and relevant websites and survey reports. The findings were then triangulated and synthesized.

Key Findings: Findings of various studies have revealed that the prevalence of diabetes is found high in urban population compared to rural population sedentary lifestyle. Diabetes can be managed if detection is done at an early stage, which is not found in Kerala at that level. NPCDCS programme was implemented in Kerala across few districts to address this issue but several loopholes in service delivery were found due to lack of funding. State implemented the Amrutham Arogyam programme in all the districts of Kerala which has been successful in Kerala. However issues such as lack of funding, manpower, and infrastructure have not shown much impact in terms of diabetes risk reduction.

Conclusion: The state need to ensure that the loopholes in terms of service delivery, infrastructure and manpower are addressed and the programmes need to strengthened at each level of the health system in order to overcome issues related to diabetes

AIM:

Literature review on the status of Diabetes Control Programme in Kerala

OBJECTIVES:

- To study and interpret the implementation of Diabetes Control programme in Kerala
- To identify impact of the Diabetes Control programme in Kerala
- To give recommendations to reduce diabetes in the state of Kerala.

METHODOLOGY:

Secondary data collected from (1) systematic review of literature including articles, policy documents and journals (2) relevant websites and survey reports (NFHS-4, NHM Kerala, Rural Health Statistics 2014-2015, IDSP-NCD Survey 2007-2008, WHO Reports, IDF Atlas). The findings were then triangulated and synthesized.

REVIEW ARTICLES	AUTHORS	FINDINGS
Non communicable Diseases Risk Factor Surveillance: Experience and Challenge from India (2006)	M. Deepa, R.Pradeepa , R.M Anjana, V. Mohan	Study revealed that improving country-level surveillance and monitoring must be a top priority in the fight against NCDs.
Epidemiology of Type 2 Diabetes Scenario (2007)	Vishwanathan Mohan, Singh Sandeep, C D Varghese	Prevalence of diabetes was found high in urban areas and in the younger age groups.
Behavioral risk factors for non communicable diseases among adults in Kerala, India (2008)	T N Sugathan, C R Soman, K Sankaranarayanan	Younger generation was found to be at higher risk for behavioral risk factors such as smoking and alcohol consumption.
Current scenario of diabetes in India (2009)	Ambady Ramachandran, Chamukkutan Snehalatha	Study revealed that medical costs incurred by a person with diabetes are two to fivefold higher than those incurred by people without diabetes.
Socioeconomic Position and Prevalence of Self-Reported Diabetes in Rural Kerala, India: Results from the PROLIFE Study (2010)	T S Anish , Krishna Pilla Vijaykumar	Proportion of self-reported diabetes was highest in the group with the highest socioeconomic status.
Multi-sectoral action for addressing social determinants of non communicable diseases and mainstreaming health promotion in national health programmes in India. (2011)	Arora M, Chauhan K	Decentralization is required in primary care which can address health inequities and addressing the social determinants of health.

Risk Factors of Diabetes Mellitus in Rural Puducherry (2012)	Sumanth Mallikarjuna Majgi, Bala Soudarssanane M, Gautam Roy, Ashok Kumar Das	Study showed that BMI is an independent predictor of diabetes. Odds of diabetes were found more in those who had family history of compared those without family history of diabetes.
Evaluation of non communicable disease control pilot programme of National Rural Health Mission in Thiruvananthapuram district (2013)	Regi Jose , Ramdas Pisharady , P.V. Benny , Zinia T. Nujum , S. Rema Devi , Sara Varghese , P.S. Indu	Study revealed that sensitization regarding the programme was found inadequate and ASHA can play an important role in controlling NCDs at the community level
Surveillance of Non communicable Diseases by Community Health Workers in Kerala: The Epidemiology of Non communicable Diseases in Rural Areas (ENDIRA) Study (2014)	Jaideep Menon, Ajit Thachil, Amitava Banerjee	Prevalence studies for the risk factors are required over time for service planning and mapping disease trends.
Epidemiology of diabetic foot complications in a pediatric clinic of a tertiary hospital in South India (2015)	Arun S. Melon, Suja Abraham	Study highlights the importance of foot care and relevance of early detection of diabetes and subsequent monitoring of the diabetic complications.
A community-based study on knowledge of diabetes mellitus among adults in a rural population of Kerala (2016)	Beteena Kurian, Maria Amin Qurieshi, Rajni Ganesh	Awareness regarding diabetes mellitus was average but in depth knowledge was lacking. Moreover, knowledge about complications and treatment was less among diabetic respondents

Prevalence and its risk factors of diabetic patients in urban area of Palakkad: an observational study (2017)	Ameesh M , Murugan S.	Many risk factors like age, diet, alcohol intake, physical activity and family history were found to influence diabetes in the urban studies.
Seven-year longitudinal change in risk factors for non-communicable diseases in rural Kerala, India: The WHO STEPS approach (2017)	Srinivasan Kannan, Sankara P. Sharma, Oliver Razum	Decreasing levels of physical activity and the per capita daily calorie intake and consumption of processed food items high in salt and sugar has increased compared to those in the rest of India.
Non-communicable Diseases, Rising Morbidity Rates and Risk Factors: The Kerala Experience(2018)	Bittu Ann Chacko & Roy Scaria	In Kerala, the prevalence of non-communicable diseases has been rising. Changing consumption pattern coupled with the lack of physical activity especially among the school going children is adding fuel to this alarming situation.
Health system preparedness in non communicable diseases: Findings from two states Odisha and Kerala in India (2018)	Rajmohan Panda, Sandeep Mahapatra, Divya Persai	Lack of skilled workforce, lack of monitoring and supervision in the collection of NCD-related morbidity and mortality data, insufficient investment in HMIS are some of the factors that resulted in poor delivery of services in Kerala.

INTRODUCTION: According to American Diabetes Association, Diabetes is a metabolic disorder which is characterized by increased blood glucose level resulting due to defects in insulin action, secretion or both which causes serious damage to the blood vessels, kidneys, heart, eyes, and nerves. It is considered as one of the major health challenges of the current era. According to The International Diabetes Federation in 2019, 463 million adults of age group 20-79 years were having diabetes and it is predicted that it will increase in the coming years.

Global Scenario :

- Diabetes is a global problem that has posed serious threats in both the developed and the developing nations. In 2000, prevalence of diabetes attributed to 171 million and India had the highest number of people with diabetes followed by China and United States respectively (as per WHO report on global prevalence of diabetes)
- In 2014, deaths due to diabetes was estimated to be 1.5 million deaths occurred and of all deaths due to non communicable diseases diabetes contributed to 4% (as per WHO global status report on non communicable diseases, 2014).

Table 1 shows list of countries with the highest numbers of estimated cases of diabetes for the year 2000 (Source: WHO report on global prevalence of diabetes)

RANKING	COUNTRY	People with Diabetes (millions)
1	India	31.7
2	China	20.8
3	U.S.	17.7
4	Indonesia	8.4
5	Japan	6.8
6	Pakistan	5.2
7	Russian Federation	4.6
8	Brazil	4.6
9	Italy	4.3
10	Bangladesh	3.2

India Scenario:

- As per WHO Diabetes Countries Profile, India, 2016, prevalence of diabetes in India contributed to 7.8% and the number of deaths due to diabetes constituted up to 2.2 lakhs of the population.
- Envisaging the magnitude of non communicable disease in India, Government of India initiated Integrated Disease Surveillance Project –Non Communicable Disease risk factor survey Phase-I in 2007-2008 in seven states of India having high risk of non communicable diseases (Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Tamil Nadu and Uttarakhand) for the age group 15-24 to 55-64 based on physical measurements, demographic and behavioral information. A high 6% rise in Kerala was reported to have increased blood sugar level compared to other states.
- India is facing uncertainty in terms of the potential burden of diabetes, with changing lifestyles and expanding living standards diabetes and other non communicable disease is expected to increase in the coming years.

Kerala scenario:

- According to the report on the National Family Health Survey 4 high prevalence of diabetes in Kerala (32.9%) is found as high as compared to the national average (20.5%).
- As reported by Department Health and Family Welfare, 27% adult males and 19% of adult females are found to be diabetic. This high prevalence of diabetes has contributed to Kerala state being called as the *Diabetic capital of India*.

Table 2 shows the prevalence of diabetes in Kerala compared to India

(Source: Fact Sheet NFHS 4, 2015-2016)

INDICATORS	INDIA			KERALA		
Blood Sugar level among Adults (age 15-49 years)	Urban	Rural	Total	Urban	Rural	Total
Women						
1. Blood sugar level – high (>140mg/dl) (%)	6.9	5.2	5.8	8.4	9.0	8.7
2. Blood sugar level – very high (>160mg/dl) (%)	3.6	2.3	2.8	4.8	4.8	4.8
Men						
3. Blood sugar level – high (>140mg/dl) (%)	8.8	7.4	8.0	13.7	12.6	13.1
4. Blood sugar level – very high (>160mg/dl) (%)	4.4	3.5	3.9	4.7	7.7	6.3

Background:

Non communicable disease burden has posed a serious threat to the lives of people. Considering the high burden of non communicable diseases and related risk factors the Government of India launched **National Programme for Prevention and Control of Diabetes, Cardiovascular Disease and Stroke** (NPCDCS) under National Health Mission. The programme was implemented in pilot phase in Kerala in Thiruvananthapuram district in the year 2008 and in the year 2010 it was implemented across 5 districts having high burden of NCDs. The main objectives of the programme was health promotion through behavior change, outreach camps for opportunistic screening, setting up of NCD clinics, capacity building , early diagnosis and cost effective treatment. The programme screened up to 1.3 crore people in 2011-2012 and 4 lakh new diabetes cases were detected. Given the high burden of people in the state suffering from renal diseases following diabetic nephropathy and stroke, uncontrolled hypertension the state decided to move its focus from screening and early diagnosis and started to make efforts to secondary level care because of the huge demand for curative services. Despite identifying NCD control as priority of the state, centre funding for scheme under NHM has been paltry, this resulted in the need for the state to formulate its own strategy to ensure structured NCD control programme. Moreover, as public health is a state affair so it is the responsibility of the state to provide quality health care to the people. To supplement the efforts of the state and to extend the benefit of the programme to the entire population the State Health Department and the Government of Kerala jointly launched **Amrutham Arogyam** programme to prevent lifestyle diseases in the year 2013 to address the long standing issue of non communicable diseases and the related risk factors across all 14 districts of Kerala. Under the programme when 1.34 crore people were screened and clinics were started family health centers and subcentres for diagnosing lifestyle diseases. The objectives of the programme lie in 4 levels:

- Primordial level: Reduction of risk factors in the population
- Primary level : Health education for the population on healthy diet, exercise and ill effects of addiction
- Secondary level- Screening for the population above 30 years of age for non communicable diseases and free supply of medicines for all detected with NCDs
- Tertiary level- Early management and treatment of complication

KEY FINDINGS:

Indian Council of Medical Research study has estimated that 19.4% people have diabetes in Kerala. Also there is potential risk due to diabetes risk factors and complications. Diabetes can be managed if detected at an early stage, which is not found in Kerala at that level. The prevalence of diabetes mellitus is found to be high in urban population compared to rural population. It is also significantly associated with high percentage of body fat, and those who indulged in risk behaviors like abnormal consumption of tobacco. Some other issues like health education, prevention and early treatment are ignored by most persons involved patients, caregivers and administrators. Focus on the preventive strategy is not adequate. Also globalization in market has resulted in more consumption of processed foods and diets high in total energy, fats, salt and sugar. Poor awareness about the long term consequences of diabetes is among the issues that need immediate attention.

Non communicable diseases have posed a huge threat to the nation's public health system in terms of morbidity, mortality and the economic burden. In order to address this challenge centrally sponsored **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCPDCS)** was launched in 2010. The programme was implemented in 5 districts of Kerala but there were certain gaps that were found in the programme:

- According to DLHS-4 (2012-2013) a total of 24.7% diabetes cases were reported in the 18 and above age group. According to DLHS-4 (2012-2013) a total of 24.7% there was a need to shift paradigm from screening stage and to invest more in secondary level care of those with lifestyle diseases because of increasing burden of disease and demand for curative services.
- According to the annual report by Department of Health and Family welfare, 2013-2014 under NPCPDCS there was establishment of only 5 NCD clinics at the district level and no NCD clinic at the community health centre and sub centre was reported. Due to less number of NCD clinics low detection rates were found in terms of screening of NCDs.

- Fund allocation under National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) (under NHM) in 2014-2015 was 545 (amount in lakhs) which was further reduced to 217 (amount in lakhs) in the year. The reduced funding also somehow caused roadblocks in the successful implementation of programme
- Even though the programme emphasised on the free drug distribution no such provisions were made for that purpose.

The State of Kerala felt the need to develop of a structured framework at a broader level which resulted in the initiation of a state run Non Communicable Diseases Control programme- **Amrutham Arogyam** in the year 2013. The programme was pilot tested in several districts and after successful implementation all the districts in Kerala were covered under the programme.

Benefits of the programme:

- The programme extended its coverage across all districts and the services were rendered across all the district, sub district and general hospitals, community health centres, primary health centres and even the 5400 sub centres which cater to a population of five thousand.
- 9.01 lakh new diabetes cases were subjected to screening and approximately 27 lakh diabetes patients have been registered and are availing the benefits of the programme at the Amrutham Arogyam clinics (as per the National Health Mission, Government of Kerala).
- The Amrutham Arogyam clinics have been providing successful screening and treatment for diabetic foot and diabetic retinopathy as a part of secondary care.
- All NCD clinics including sub centre clinics are being provided with glucometres, BP apparatus and weighing machines for screening and special equipments like Non

Mydriatic Cameras, Biothesiometers, and Hand held Dopplers based on their service provisions.

- Provision was made for free drug distribution for the entire population by using state NCD funds. In the year 2013-2014 state NCD funds of 4 crore were used for procuring drugs for the distribution of drugs including insulin for the treatment of diabetes.

DISCUSSION: Amrutham Arogyam programme have been successfully implemented in the state of Kerala and has addressed the gaps in the NPCDCS in terms of extending early screening, diagnosis, prevention and free drug delivery across all districts and health care delivery systems but still the recent studies in Kerala have suggested that not much impact was seen in terms of overall picture of reduction in diabetes disease burden in Kerala.

CONCLUSION: As in Kerala the number and the prevalence of Diabetes cases is found to be the increasing, the state has to ensure that there is community level participation, sufficient infrastructure and it should strengthen the public health system to overcome issues related to diabetes. Also it becomes necessary to address the issues and loopholes.

RECOMMENDATIONS:

- There is a need to provide fair amount of resources for the programme so that the requirement for infrastructure and manpower can be fulfilled.
- For the purpose of providing more infrastructure and manpower fund allocation needs to be increased for successful implementation of the programme.
- Secondary care is required to scale up for the programme apart from screening and early diagnosis for the management of high burden of risk factors associated with diabetes
- Greater provision to provide medicines at affordable prices in the pharmacies need to be made across all districts of Kerala to reduce financial burden of drugs on patients.

REFERENCES:

https://care.diabetesjournals.org/content/27/suppl_1/s5

<https://www.idf.org/aboutdiabetes/what-is-diabetes/facts-figures.html>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3068646/#:~:text=Diabetes%20is%20certain%20to%20be,diabetes%20do%20not%20realize%20it.>

<https://www.who.int/diabetes/facts/en/diabcare0504.pdf>

https://apps.who.int/iris/bitstream/handle/10665/148114/9789241564854_eng.pdf?sequence=1

https://diabetesatlas.org/upload/resources/previous/files/8/IDF_DA_8e-EN-final.pdf

https://www.who.int/diabetes/country-profiles/ind_en.pdf?ua=1

https://www.who.int/ncds/surveillance/steps/2007_STEPS_Report_India_7States.pdf

<http://rchiips.org/NFHS/pdf/NFHS4/India.pdf>

http://rchiips.org/NFHS/pdf/NFHS4/KL_FactSheet.pdf

https://dghs.gov.in/content/1363_3_NationalProgrammePreventionControl.aspx

<https://europepmc.org/article/med/22628911>

<https://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=1048&lid=604#:~:text=In%20order%20to%20prevent%20and,early%20diagnosis%2C%20management%20and%20referral.>

<http://aogyakeralam.gov.in/2020/03/23/ncd-non-communicable-diseases-control-programme/>

<https://care.diabetesjournals.org/content/34/6/1249>

<https://www.who.int/publications/10-year-review/chapter-ncd.pdf?ua=1>

<https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-6445-6>

<https://pubmed.ncbi.nlm.nih.gov/11209482/>

http://ijrar.com/upload_issue/ijrar_issue_1345.pdf

<https://www.semanticscholar.org/paper/Epidemiology-of-type-2-diabetes%3A-Indian-scenario.-Mohan-Sandeep/b435d8a179320ee480013035d61f6c138c7896ce>

<https://www.ijcmph.com/index.php/ijcmph/article/view/1874>

https://www.researchgate.net/publication/270908001_Surveillance_of_Noncommunicable_Diseases_by_Community_Health_Workers_in_Kerala_The_Epidemiology_of_Noncommunicable_Diseases_in_Rural_Areas_ENDIRA_Study/link/5a917df80f7e9ba4296d9aa8/download

<http://www.ijournalhs.org/article.asp?issn=2542-6214;year=2015;volume=8;issue=1;spage=48;epage=51;aulast=Jyothylekshmy>

<https://iapsmupuk.org/journal/index.php/IJCH/article/download/260/260>

<http://www.ijmr.org.in/article.asp?issn=0971-5916;year=2008;volume=127;issue=6;spage=555;epage=563;aulast=Sugathan;type=0>

<http://www.ijncd.org/article.asp?issn=2468-8827;year=2016;volume=1;issue=2;spage=59;epage=64;aulast=Kurian>

<http://www.amhsjournal.org/article.asp?issn=2321-4848;year=2019;volume=7;issue=1;spage=18;epage=24;aulast=Bhagyalakshmi>

https://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf?ua

<https://kerala.gov.in/census2011>

<https://www.ojhas.org/issue41/2012-1-4.htm>

<https://www.thehindu.com/news/national/kerala/ncd-control-programme-suffers-as-drugs-go-out-of-stock/article5989681.ece>

https://wcd.nic.in/sites/default/files/RHS_1.pdf

<https://journals.sagepub.com/doi/abs/10.1177/1010539510387822>

<https://nrhm-mis.nic.in/Pages/RHS2016.aspx?RootFolder=%2FRURAL%20HEALTH%20STATISTICS%2F%28A%29RHS%20-%202016&FolderCTID=0x01200057278FD1EC909F429B03E86C7A7C3F31&View=%7B3EF44ABD-FC77-4A1F-9195-D34FCD06C7BA%7D>

<http://www.indiaenvironmentportal.org.in/files/Risk%20factor%20profile%20for%20chronic%20non-communicable%20diseases.pdf>

https://www.researchgate.net/publication/289857766_Burden_of_noncommunicable_disease_in_Kerala

[https://cegh.net/article/S2213-3984\(13\)00082-1/pdf](https://cegh.net/article/S2213-3984(13)00082-1/pdf)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5144115/>

<http://www.ijcm.org.in/article.asp?issn=0970-0218;year=2011;volume=36;issue=5;spage=50;epage=56;aulast=Deepa>

<https://data.gov.in/resources/release-funds-under-national-programme-prevention-and-control-cancer-diabetes>

https://www.dbcf.unisi.it/sites/st13/files/allegati/17-02-2014/diabetes_2010_2030.pdf

<https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1606206>

REPORT ON ONLINE COURSE (PART II)

HEALTH SYSTEMS STRENGTHENING

*THE UNIVERSITY OF MELBOURNE, THE NOSSAL INSTITUTE FOR GLOBAL HEALTH
AND UNICEF*

COURSE DESCRIPTION

The course is eight weeks long. Within each week, three to four activities are designed to impart skills and knowledge needed to for the better understanding of the health systems strengthening framework. The course introduces us to the health system concepts, structure, functions, and how various approaches work to make us understand the complexity of health systems and how the systems thinking can be applied to health systems strengthening (HSS).

OBJECTIVES OF THE COURSE

- To develop knowledge and skills in health systems strengthening (HSS) so as to improve health outcomes for disadvantaged women and children.
- To apply complex systems thinking in the design and implementation of interventions used in the health systems strengthening.
- To evaluate health systems strengthening interventions for their evidence base, sustainability and capacity to support universal health coverage.

COURSE METHODOLOGY: The course was conducted via videos lectures and a written transcript. To get a better understanding of the course professional interactions, case studies, debates and panel discussions were also available.

COURSE COVERAGE:

WEEK 1: INTRODUCTION TO HEALTH SYSTEMS STRENGTHENING

It covers the meaning and the basic concepts related to health system strengthening. It gives us a guide to think about health systems and health system strengthening since the Alma-Ata Conference in 1978 which aims to achieve “Health for all by the year 2000” (WHO, 1981), right up to the focus on universal health coverage. It makes us understand how conceptual framework help us to make health systems working better and introduces us to the main frameworks including World Health Organization’s health system building blocks .It presents the concepts of system complexity and their role in health system performance such as path dependency, feedback loops, tipping points and emergent behavior. It explores the kinds of interventions that have helped to reinforce the availability of comprehensive primary health care close to communities.

WEEK 2: EQUITY IN HEALTH SYSTEM STRENGTHENING

It covers the meaning of equity and examines ways in which equity is measured and reported. It identifies and characterizes inequity and describes how health systems can be shaped to address and account for inequity. It explores how the health system approach can be used to undertake equity analysis. It shares case studies from a variety of settings to make us think how the frameworks and lessons can be applied to our own context.

WEEK 3: HEALTH SYSTEMS STRENGTHENING ACTIONS AT DIFFERENT LEVELS OF THE HEALTH SYSTEM

It covers how the health system strengthening efforts can be applied to the national, sub national and community levels of the health system. It looks into the national planning process in the health system. It focuses on the health systems strengthening at the sub national or district level. It focuses on the community level health systems and community engagement. It helps us to understand the roles of community and frontline health workers, and how relevant tools and approaches to improve community-based health systems can be adapted to work in different contexts.

WEEK 4: HEALTH FINANCING

It covers the four functions of health financing: collection, pooling, purchasing and payment. It makes us understand the role of government revenues in funding health care. It also talks about the way we can do a fiscal space analysis to assess where additional funds might be available and finally it gives us information about the data sources and modeling tools used in health financing, and identify their strengths and gaps.

WEEK 5: HUMAN RESOURCES FOR HEALTH

It covers the human resources that are a part of health systems. It addresses the differences in levels of unemployment among health professionals in different countries. It describes how health systems differ in the way they define the professional categories that make up the health workforce. It discusses about how the management of the health workforce is implicated in how well it performs.

WEEK 6: SUPPLY CHAIN MANAGEMENT

It covers one of the most fundamental elements of the health system i.e. Supply Chain Management, the way they contribute to health system strengthening, and systems-wide and issues-based approaches to strengthening procurement and supply chain management at national, sub national, and community levels. It discusses the challenges and potential solutions of greater integration of supply chain management within existing health systems and factors that influence the resilience of health systems in emergency settings, fragile states and in countries that have differing capacities of their health systems.

WEEK 7: QUALITY OF CARE

It covers where and how quality of care fits in health systems strengthening, examines the definitions of quality and review WHO 2015 framework for quality of maternal and newborn care in facilities. It discusses the importance of multi sectoral involvement in the provision of quality care. It provides us with the understanding of the components of quality care provision. It informs us regarding the regulatory approaches that are designed to ensure consistency and quality at the national level. Examples include accreditation processes and social franchising. Finally it looks into the ways to ensure that the quality improvement systems are benefiting the disadvantaged and vulnerable populations.

WEEK 8: MANAGING A MIXED HEALTH SYSTEM

It introduces us to the mixed health systems. It discusses the role of private sector in improving population health. It makes us understand the types of private providers serving the population and the kinds of services they provide. It gives us an overview on the type of engagement with different civil society organisations and stakeholders we need to select in a given setting.

KEY LEARNINGS FROM THE COURSE:

- Using your knowledge and skills in health systems strengthening to improve outcomes for disadvantaged populations.
- Applying complex systems thinking in the design and implementation of health systems strengthening interventions.
- Applying health system interventions for their evidence base, sustainability and capacity to support universal health coverage.
- Using evidence and analysis of inequity to drive interventions to strengthen health systems.
- Strengthening health systems through action in areas such as health policy, financing, human resources, supply chain management, quality of care and private sector engagement.
- Learning about concept of universal health coverage, primary health care approach and widely used frameworks for health systems strengthening, including the World Bank and WHO frameworks, and understanding the health systems as a complex adaptive system.
- Addressing the complex health system determinants of weak supply chains.
- Learning about community level systems and the different ways communities can engage with health systems to affect accountability, transparency and their right to health.S
- Identifying inequities in service delivery and health outcomes and the link between quality of care and health systems strengthening.
- Learning about the principal components of health care financing and role of government in funding health care.
- Management of health workforce.
- Influence of mixed health systems on health services in low- and middle-income countries.