MOVING TOWARDS UNIVERSAL HEALTH COVERAGE IN YEMEN

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A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in Public Health by Fathi Qasim Mohsen Garran, Yemen

Declaration:

Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.

The thesis **moving towards achieving universal health coverage in Yemen** is my own work.

Signature: 

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Abbreviations:

GDP	Gross domestic product
IDPs	Internally Displaced Persons
INGOs	International Non-governmental Organizations
MOPHP	Ministry of public health and population
MSP	Minimum service package
SDGs	Sustainable Development Goals
UHC	Universal health coverage
UN	United Nation
WHO	World Health Organization

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Abstract:

Background: Before the war, Yemen had aim moving towards to achieve universal health coverage as a commitment to expand service coverage to improve health status. The war has affected negatively on the health system and stopped most of the progress. The health sector is still facing serious challenges and needs improvement to address the high burden of diseases and its related mortality. Therefore, the study aims to describe and analyze the status of universal health coverage before and during the war in Yemen.

Method: Literature review of available resources in the period from 2000 until the last update in 2019.

Result: Health service package not defined well in Yemen before and during the war, population coverage of health service was very low before 2015 and became worsen during the war. About 17% of the people were facing catastrophic health expenditure before the crisis also out of pocket was very high. During the war, around 65% of the population became in need of health intervention. In general, universal health coverage was very low before the war and become worsen during the war.

Conclusion: Universal health coverage becomes worse during the war, to move toward to universal health coverage, Ministry of Health and INGOs should work together to define a service package based on the current situation, health needs, and available resources to ensure all populations covered of health services and timely access to health services without financial risk.

Keywords: UHC, service package, population coverage, financial protection, fragile setting, and Yemen.

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Introduction:

I worked in the health sector before joining this program; I was responsible for managing different health and nutrition programs, in partnership with the Ministry of Health and international organizations in Sadaa, Al Hididah and Hajah governorates in Yemen, in the period from 2008 to 2018. During my work, of implementation of different programs, I observed that there are gaps during the interventions; health services did not cover all the areas due to limited resources, furthermore, the health system faced many challenges due to lack of resources, destroyed infrastructures; a lot of health facilities have been destroyed or are closed during the war.

Focusing on universal health coverage, as a commitment, is very important, to ensure that all people have access to the quality and equitable health services which they need on time and in the right places where they need the services, without exposing them to financial hardship, as one of the human rights. UHC is considered as one of the indicators for development, to achieve sustainable development goals (SDGs) by 2030. Universal health coverage is the best way to ensure that everybody can get health services when they need it without facing financial risks. In addition, it's a good way to help people and to invest in human capital, it is considered one of the key drivers of wide and sustainable economic growth and development

I am interested to explore more about the situation of universal health coverage in Yemen, before and during the war, especially With increased the fragility in Yemen, increased people in need and present new actors during this situation like INGOs. In addition, I will try to find the best practices to recommend the respected authorities for improving toward universal health coverage in Yemen during this situation.

Chapter 1: Background information about the Republic of Yemen:

1.1 The geography and climate in Yemen:

Figure 1Figure 1: Figure 1: Yemen-map source: vectorstock (1)

Yemen is an Arab Muslim country that is situated in the Middle East in Western Asia, precisely in the south of the Arabian Peninsula and it is the second-largest Arab country there. Before 1990, Yemen consisted of two parts, South and North, which officially unified in 1990 to create the country as it is today. In terms of area, Yemen ranked as the 51st country in the world, occupying around 528,000 square kilometres with a coastline of 2,000 kilometres. It is bordered at the North by Saudi Arabia and the Red Sea; Bab-al-Mandab Strait to the West, the Aden-Gulf to the South and the Arabian-Sea and Oman to the East(2).

Yemen is divided into five areas (regions); mountain regions, highlands, coastlines, an empty quarter, which is called the desert of Alruba Alkhlee and the Yemeni Island group (3). The climate varies in Yemen. It is hot and humid on the seaboard, while it is likely to be colder in winter in the mountainous highlands and hot and dry in the desert areas(4).

1.1 Yemen demography:

The present estimated population of Yemen in 2019 is 29.2 million, which is a sharp increase from the 1980 estimate of 8 million. The annual growth rate is estimated at 3% and the sex ratio in the total population is 1.03 male/female(5). An estimated 41.4% of the population is in the age group of 0-14 years, 55.7% in the age group of 15-64 and 3% in the age group over 65 years of age (See figure 2). Overview of the population in Yemen is less than fifteen years old. Yemen is one of the countries, which has the highest fertility rate around the world; estimated around 4.5 children per woman. The observed life expectancy has improved over the last few years and it is presently 70.3 years for females and 66 years for males (6) (7).

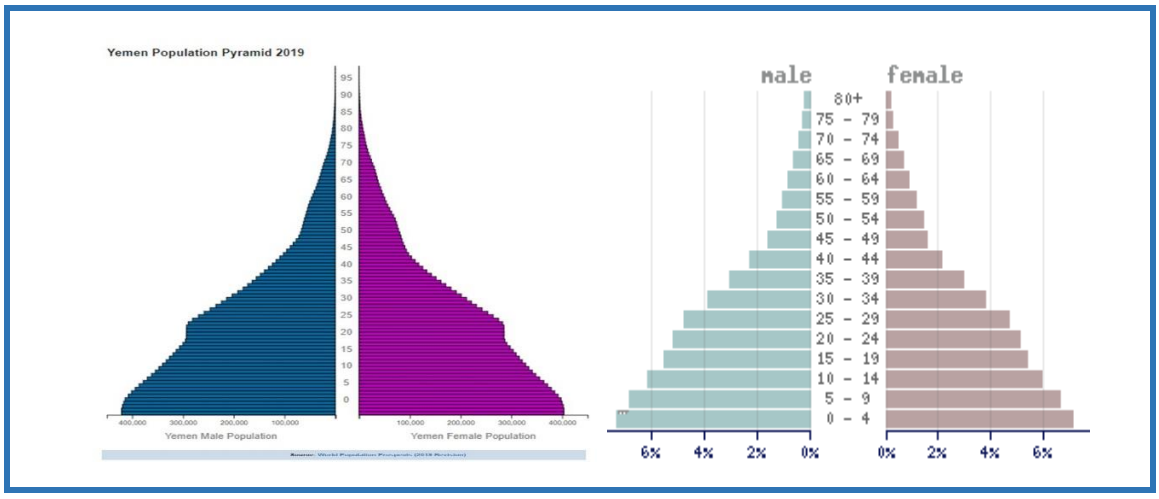

Figure 2 Population-Pyramid _ Yemen. (6) (7).

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1.2 The socio-economic situation in Yemen:

Yemen is a low-income country, which is affected by internal conflicts and external wars led by the Saudi coalition. This has disrupted economic activities, increased unemployment rate, increased poverty and destroyed the basic infrastructure. Food insecurity is now one of the major problems in Yemen(8). An estimated 80% of the population in Yemen is in need of humanitarian assistance(9) and the poverty rate has estimated almost double in rural areas compared to the urban. An estimated Gross domestic product (GDP) per capita in 2018 was 745 USD, which is a sharp decline of almost half of the 2014 rate of 1574 in 2014. Additionally, the exchange rate for 1 US$/YER increased from around 215 YER to a dollar in 2014, to 542 YER /$1 in 2018(8).

1.3 Education:

The education sector faces many challenges, like other sectors, due to the conflict, even before the war. The enrolment rate of 6 to15 years of age is still very low, 57%; with a huge difference between males and females; 71% for males and only 37.7% for females. The literacy rate in the general population stands at 70.1%, with an estimated 85% of males educated compared to 55% among females(5). Only about 12 % of females, six years of age and older, reach the secondary school level, compared to 23% of males(10). Between the rural and urban areas, uneducated males and females are found twice as much in the rural localities as in the urban(10).

1.2 Religion, Political and Security situation in Yemen:

Most of the people in Yemen are Muslims, around 98% with about 56% of the Shafai and Sunni denominations and 42% of the Zaidi ‘a Sheyaa. However, there are still a few Christians and Jewish in the country; an estimated 1000 Christians and only about 50 Jewish. Yemen is a member of the United Nations and the Arab League, an estimated population in Yemen is that 29 million people live in the country. Sana'a is the capital city of Yemen; the country is suffering from war and long-term corruption (10).

In 2011, Yemen started to experience a political crisis behind the Arab revolutions. The protests were in the beginning focused on corruption and economic hardships as well as on the demands for change in government. This caused victims from all parties, due to the government’s reaction. Gulf countries with support from other countries and their financial power tried to urge President Ali Abdullah Saleh to resign, and give his role to Abdu Rabouh Mansour, this attempt called the gulf initiative at that time. Then followed by the National Dialogue Conference, which did not succeed. In 2015, Ansar Allah controlled the capital city, Abdrabuh Mansur Hadi escaped to Saudi Arabia, leaving, practically, the control to Ansarullah of the country, and then the Saudi coalition declared the war on Yemen. Their stated goals, according to them, is to reverse the Ansarullah military power and to return back the government of Abdrabuh Mansour to the capital city(11).

Four years on, the Yemen war is currently considered as having one of the worst humanitarian crises in the world, and with the most people in need of humanitarian aid in the world, the main losers are the Yemeni people without having a clear vision to stop the war(11).

1.3 Health and epidemiological overview in Yemen:

The Ministry of Public Health and Population (MOPHP0 in Yemen, declared that cholera affected most of the governorates in Yemen. There are around 21,800 of cholera (suspected cases) and reported 13 related death cases during a week, from the 24th to the 30th of June 2019, 13 % of reported suspected cases were severe. The total number of reported suspected cases, from the beginning of 2018 up to end of June 2019, is around 823,000 cases and the number of reported deaths, related to cholera, in the same period is 1210 cases and 23% of the reported suspected cases are children less than 5 years(12).

HEALTH INDICATORS

Indicator	Value
life expectancy at birth, 2011(10)	65 year
undernourishment in % of the population, 2011(10)	32%
Stunted (among children under 5 year of age)(13)	58%
death due to communicable diseases, prenatal, maternal, and malnutrition (14)	44% of the total death
Death due to injury (14)	11% of the total death
Death due to non-communicable diseases (14)	45% of the total death
maternal deaths per 100.000 live births(2010) (10)	200
neonatal deaths per 1.000 LB(2011) (10)	32
infant deaths per 1.000 live births(2011) (10)	57
under-5 deaths per 1.000 live births,(2011) (10)	77
General Acute Malnutrition among children under 5 year (15)	16%

Figure 3 Health Indicators(13) (14) (15)

1.4 Health system overview in Yemen:

The Ministry of Public Health and Population is one of the ministries of the Yemeni government, based on Yemeni law, is officially responsible to supervise health care in Yemen. With the current situation in Yemen, practically there are two ministers of health; one controlling the northern regions and another the southern.

Provision of Health services are through the public sector, including the ministry of health, the ministry of defense facilities are called military hospitals and the ministry of interior's facilities are called police hospitals and the private sector, including profit health sectors and non-profit health sectors, see figure No.4(16)

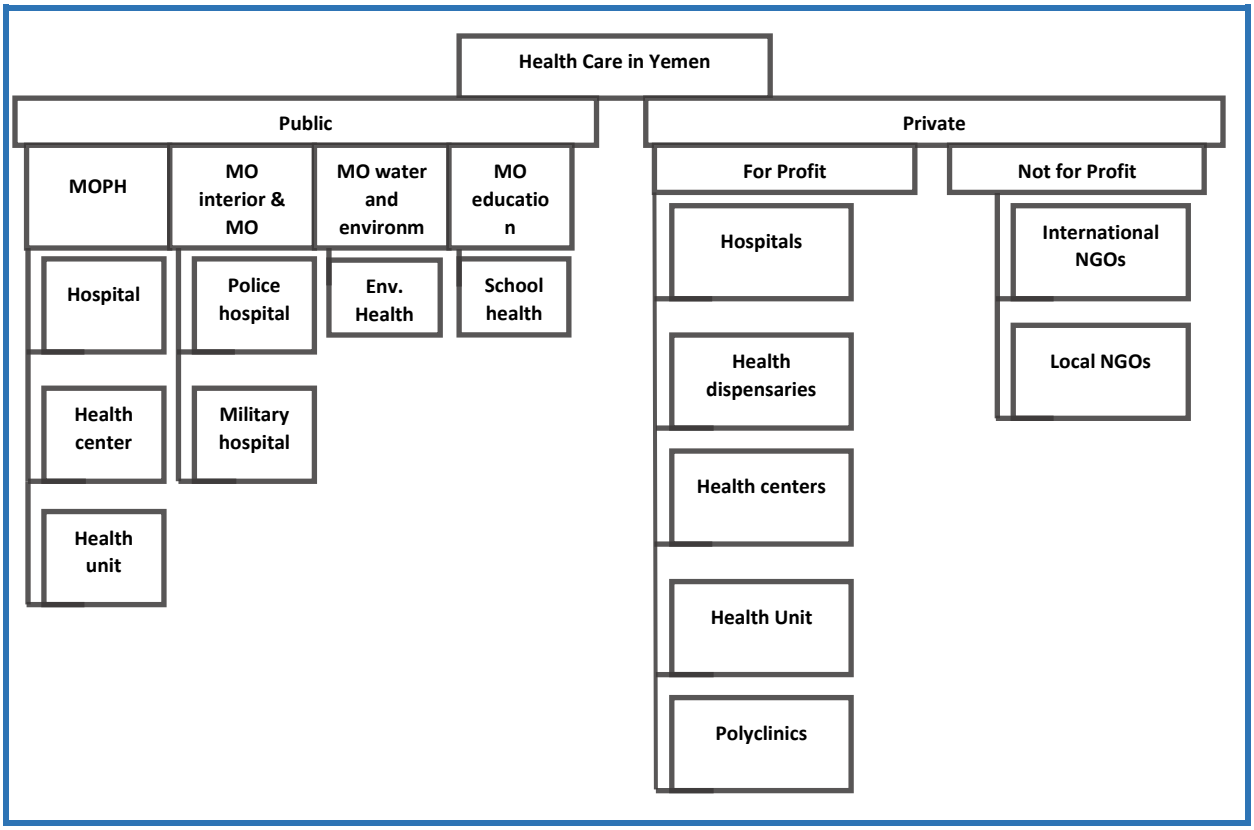

Figure 4 Health Care in Yemen

The total number of public health facilities in Yemen is 4296; 375 hospitals(17), 1147 health centres (17) and 2774 health units(18); many of these were partially functional during the war and some of them closed or destroyed. There are four levels of health care service provisions in the Yemeni healthcare system; health units and health centres at the first level, government and district hospitals at the second, referral hospitals at the third level and specialized hospitals in the fourth level (See Figure 5) (18). Health facilities are inequitably distributed across the country, with the placement of facilities in many areas being based on political and other social considerations, rather than the actual needs of the population(16).

Type of health facilities	Level
Specialized Hospitals	Fourth Level
Referral Hospitals	Third Level
Gov., Dist. Hospitals	Second Level
Primary care units + Health Centers	First Level
Various levels of health care services previsions in health system	

Figure 5: Type of health facilities Level

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Chapter 2: Problem statement, Justification, Objectives, and Methodology:

2.1 Problem statement:

The war in Yemen has resulted into a serious humanitarian disaster and it has been considered as one of the worst humanitarian disasters in the world in recent times. This is due to the deterioration of the economy, increased morbidity, and mortality from common diseases. There is an overwhelming, need by millions of Yemenis, for food, shelter and health care. Currently, it is estimated that 80% of the population of Yemen requires some kind of humanitarian support or protection (9)

Even before the war, the health status and quality of life in Yemen faced serious challenges and needed improvement, to address the high burden of diseases and its related morbidity and mortality. Mother and child health indicators are still serious and need attention, even though the infant and under-five mortality rate was improving before the war since 1990, but those figures are still not acceptable, based on recommendations of the international standard(19), Yemen still has the highest maternal mortality and under-five mortality rates in the middle east(20). Malnutrition among children under five years is also high and nearly half of the children in Yemen are affected, making it the second-highest rate in the world (21). The maternal mortality rate is among the highest in the world, which is reflective of the inadequate and low quality of maternal health services in the country(22).

Although the current maternal and child morbidity and mortality profile is not readily available, due to the war and the difficulties, it imposes in conducting a Demographic and Health Survey (DHS). However, records from the health cluster bulletin in 2018 show that there is a lack of maternal and child health care services in the country; which has resulted in negative effects on their health status(23). Recent estimates indicate that 3 million women and girls of childbearing age are in need of some kind of support and around one million pregnant and lactating women are malnourished(24). The situation has created many challenges; to provide clean water, sanitation, and health services and has led to an increase in the number of chronic disease cases, trauma, diarrhoea, measles and a significant increase in malnutrition among children. In addition, there have been many outbreaks of cholera and diphtheria in the last few years, with an increase in the number of internally displaced persons (IDPs) (25)

The war has hastened the change in the epidemiological profile of the burden of the diseases, with many non-communicable conditions such as mental health problems and injuries are seen in increasing numbers. However, with this epidemiological transition, there is also an increase in infectious conditions, such as cholera and diphtheria aforementioned, presenting an already fragile health system with a double burden of diseases that have to be mitigated (26). There is also an increased demand for health services, with a health system riddled by the lack of essential medicines, medical equipment, and medical supplies, lack of resources and destroyed the infrastructure(27). These challenges, which existed prior to the civil conflict, have become increasingly more pressing, as the conflict persists (28).

Since the adoption of the Sustainable Development Goals (SDGs) in 2015, achieving Universal Health Coverage (UHC) becomes now a health target of the global health community, and are meant to ensure that individuals and communities can receive the quality of health services they need, including promotion, preventive, treatment, and rehabilitation health services without any financial hardship(29). Universal health coverage is considered a

normative goal for all countries and it became more important in the countries in crises. The gaps and challenges presented in a normal situation deepen even more during the crisis, in terms of population coverage and access to health services, equity, and vulnerability posed by financial hardships (30).

Achieving UHC in a crisis/fragile setting becomes more difficult than in a normal, functional context. There is limited research available, regarding this concept and the few that are found usually are studies that depend on the information gathered after the crisis period, because it is almost difficult to collect such all information during the crisis. During conflicts, the emergence of new actors, besides the ministry of health, as INGOs, pose an additional challenge, as these actors are focusing more on addressing emergency needs in affected areas, often without interventions geared at the provision of UHC. It is not yet clear whether the concept of universal coverage is taken into account during humanitarian interventions since they only provide assistance to specific areas where the conflict is taking place(26).

Yemen did some progress before the war towards achieving UHC (31)(32). The MOPHP published and promulgated the National Health Strategy 2010-2025 which was aimed to expand primary health services and to ensure equitable distribution of health services(16). A National reproductive health strategy was implemented as well from 2011 to 2015 and this together with the National Health Strategy, has generated some improvements in the health indicators (33). However, the situation created by the war, since 2015, has prevented the full implementation of the national health strategy across the country (16)(34).

2.2 Justification:

Focusing on universal health coverage as a commitment is very important to ensure that all people have access to the quality and equitable health services, which they need on time and in the right places, where they need the services, without exposing them to financial hardship as one of the human rights. UHC is considered as one of the indicators for development to achieve sustainable development goals (SDGs) by 2030(35). Universal health coverage is the best way to ensure that everybody can get the health services they need without facing financial risk. Also, it is a good way to help people and to invest in human capital, it is considered one of the key drivers of wide and sustainable economic growth and development(32).

During the war, there is limited effort and a lack of information to see how to progress of universal health coverage even as it lost the track of monitoring UHC. Therefore, and based on the issues highlighted before and the increasing fragility that is still ongoing in Yemen, a movement towards universal health coverage, which aims to ensure equity in health service and reduce financial hardship for the people, is very important and a necessity for research. This study will focus on to get more overview and will highlight the key issue about the three dimensions of UHC; service package, population coverage of health services and financial protection and will try to find out the best possible options in such a situation in order make recommendations to health authorities and concerned actors.

2.3Overall objective:

The overall objective of the thesis is to describe and analyze the status of universal health coverage in Yemen before and during the war, to make recommendations to the respective health authorities and stakeholders in order to move towards universal health coverage in Yemen.

2.4 Specific objectives:

- To describe and analyze the essential health services package before and during the war.
- To describe and analyze the population coverage of essential health services before and during the war.
- To describe and analyze financial risk protection before and during the war.
- To describe and find best practices, from similar settings, aiming to improve the health services package, population coverage of health services and financial protection.
- To provide recommendations to respective health authorities and stakeholders to move forward for achieving universal health coverage.

2.5 Methods and search strategy:

The methodology of the research will be based on literature review, it is an attempt to conduct comprehensive research with critical analysis as much as possible from several resources, all found available resources, published in Arabic and English, will be considered. A literature review will be done for both peer and non-peer, reviewed in the period from the beginning of 2000 until the last update in 2019. This is will be done by searching through the main search sources such as Google Scholar, Medline, PubMed, the WHO website and the VU library, to review published literature. Several papers and reports are found related to the topic, from several sources; including research centres, UN agencies, organizations, donors and relevant actors, will be considered for review and analyses, to reach the main objectives.

April 2015 will be considered as a borderline between the period before and during the war. Even though there was a conflict before 2015, April 2015 when the starting Saudi- led coalition, which is considered as a significant change of the way of the conflict at that time. This research was initiated intermittently between January 2019 and May 2019. The research was completed in the period of June to August 2019.

Search keywords, inclusion and exclusion criteria:

During the search will attempt to find the suitable terms and inclusion and exclusion criteria to find relevant resources

Search terms: universal health coverage, UHC, Universal health coverage in Yemen, Health, health system, health financing, service package, essential service package, country profile, health policy, health strategic plan, health AND epidemiology OR Yemen, conflict in Yemen, war AND Yemen, Yemen AND security OR situation

Inclusion and exclusion criteria were used to find an easy way to find the resources, such criteria were used; published in English and Arabic, the period from 2000 up to 2019, peered and non-peered review, sometimes selected the country, Yemen, to narrow down the search for Yemen only to find specific information regarding to Yemen.

2.6Conceptual Framework:

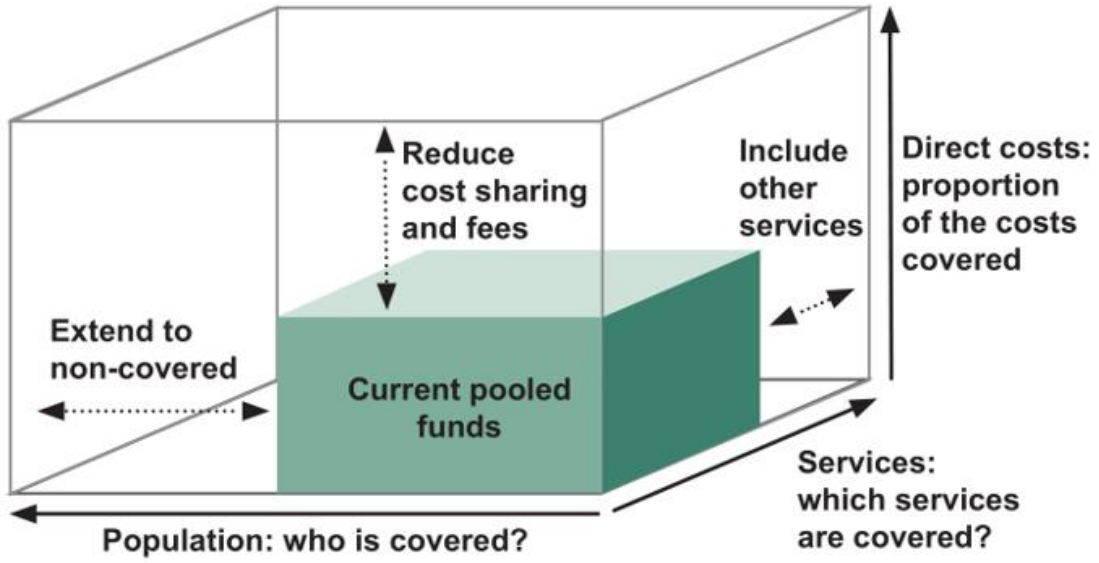


Figure 6 UHC three dimensions framework Source: WHO report, 2010 (36)

The three dimensions of universal health coverage UHC cube from the WHO report 2010, in the figure 6 will be used as a conceptual framework. The framework will be used to guide the search path, to review and analyse the three dimensions shows in this framework; Service package, population coverage of essential health services and financial protection to attempt to reach specific objectives. The framework also shows how the three dimensions, financial protection, service package and population coverage of health services, are linking together for universal health coverage. Based on the framework, the study will attempt to review the three diminutions of UHC shown in the framework, and see how they linked together with analysing the status before and during the war

2.7Expected results:

- External funds have a key role, to increase to provide health services in Yemen
- Access to equitable quality health services remains one of the main challenges during the crises.
- the crises had affected to move towards UHC

2.8 Limitation of the study:

- A lack of prior study, regarding the universal health coverage in Yemen
- Limited studies have been done regarding the universal health coverage in crisis
- The Ministry of Health website was not updated since 2014; therefore, most of the data is not update after starting the war in 2015 in Yemen.
- limited information regarding health system in Yemen before and during the war

Chapter 3: Study Findings:

In this chapter, I will attempt to review the most findings, regarding the three dimensions of UHC and also review and analyse the most indicators for each dimension to give more understanding of each dimension of UHC, based on the three dimensions of the UHC framework, the chapter is divided into three sections;

- Section 1: Health service package:

In this section will attempt to describe the essential health services package before and after 2015

- Section 2: population coverage of health services:

In this section, will attempt to review most of the indicators, related to health services coverage, such as child vaccination, antenatal care, family planning, treatment of sick children, TB, NCD, and injury treatment.
In addition, I will attempt to give an overview of the access to health services, distribution of health forces, quality of health services and the equity regarding UHC.

- Section 3: financial protection:

This section will give an overview of health expenditure, focusing more on the most indicators, related to catastrophic expenditure and I will attempt to take an overview of external funds.

Section 1:

3.1. Health service package:

The Basic health service Package is all the services that the government provides or wants to provide to all the population, equitably to achieve the multiple objectives; to guarantee the equity, ensure the efficiency and accountability for effective care and political strengthening(33)

In Yemen, public health services are delivered at primary, secondary and tertiary levels(16), after research in many published sources, it is found that Yemen, until 2015, did not have a specific health services package, which is well specified and defined as indicated clearly in the health strategic plan and other resources (16)(33). There were attempts from MOPHP, with support from consultants from the European Union, to develop a clear essential service package in 2004, but in 2005 it was reported that these attempts have not been successfully tested in reality, in the health facilities (33). In 2005 the national guideline for health unit and health centre(37) has a description for two different packages of services, that the government aimed to provide; service package for a health unit and the other for a health centre, recently in the 2019 national guideline for hospitals (38) contain explanation for health services in the hospitals. Here I will attempt to give an overview of the health service package, based on what I found in the 2005 national guideline for health units and health centres(37), national health strategy, in the 2019 national guideline for hospitals(38) and in the snapshot for essential service package in Yemen published by USAID on 2015(33)and other sources:

3.1.1. Health service package before 2015:

1- ***Health services at the first level (primary health care level)***

Primary health care services are provided at the community, health unit, and health centres:

Health services at home, such as health awareness, follow up defaulters and some activities such as immunization through community health volunteers and community trained midwives. Basic health services are delivered at the community, such as management of malnutrition, immunization, antenatal and postnatal care through community health workers or to carry out outreach activities from the health unit to provide health services at the area of the community, which are far from the health unit, through health workers.

Service at health units are primary health care services, which include health promotions, prevention, and treatment services, focusing on health education, deworming, immunization, antenatal and postnatal service, child health care, promoting breastfeeding, diagnostic and treatment of malnourished children, treatment and follow up of common diseases like diarrhoea and pneumonia. Also providing first aid services in case of wounds, burns, domestic accidents, animal bites, fractures, poisoning, shocks and in addition dispensing essential medicines. The services are provided at the community level, health units, health centres, and district hospitals through health workers in the health facilities and community health volunteers and community midwives at community. (33) (37).

Health services at health centres; the health centre provides the same services as in the health unit with the expansion of some services such as drugs, increased diagnosis capacity, normal delivery services, and essential services for newborns.

2- <u>Health services at the secondary level:</u>

Health services in the hospitals for those who cannot be in the primary health care level and need further management, such as diagnostic tests, like laboratory and radiology and inpatient healthcare, general surgery and emergency services (18).

3- <u>Health services in tertiary level:</u>

At the tertiary level, health services are for complicated cases and those who come from the secondary level, as having a high-qualified staff. even though some of the cases are difficult to manage at tertiary levels and need to be treated in special centres, even some times could be managed at that level and need to travel outside the country (16).

4- Health services in specialized centres:

There are health specialized services provided through specialized centres mainly in Sanaa and Aden only; such as a cardiac centre, a cancer centre, a kidney centre , a blood bank and a rehabilitation centre(16).

5- Free Medical Camps Program:

Medical camps is a program established by MOPH to provide free health services in difficult to access areas and to work in emergency and promote the health awareness of the community, the medical camp program includes most of the specialized services, such as cardiology, general surgery, ophthalmology, internal medicine, obstetrics and gynaecology, orthopaedics, urology, paediatrics, ENT and other specialized services(28) (26)

6- Vertical Programs:

The vertical program provides health services as part of a service package in the health unit, centres, and hospitals; there are several programs funded through external grants from different donors; those programs are integrated together to provide services in which they are part of the health services packages that are provided in health facilities (16)(33). Vertical programs have their own staff, who are trained more on program components. Usually, vertical programs perform well and are funded by donors(18). Those programs are:

- National Malaria Control Program and HIV/AIDS, which includes case management of malaria (diagnosis and treatment) and prevention of malaria (Long Lasting Insecticide treated Nets and IRS) and Provide HIV services.
- National Tuberculosis Control Program which includes treatment, Prevention, case finding health education of TB, providing BCG and health surveillance in the community
- Expanded Program on Immunization (EPI) supported by the WHO, UNICEF, and GAVI
- Community Health Volunteer.
- Schistosomiasis Project (SCP): this project is supported by the World Bank for prevention, treatment, and surveillance of Schistosomiasis(39)

3.1.2. Health service package during the war:

1- Health services at the first level (primary health care level):

The health cluster, in coordination with the MOPH, during the war, developed a framework of minimum service packages, (MSP)(40) to deliver the essential need of health services, strengthen the health system and increase access to basic health services, among the population(41); focusing on eight components of health at the health unit , the health centre also at a district hospital (40):

1. Communicable diseases.
2. General services and trauma care.
3. Reproductive/maternal and newborn health.
4. Childcare.
5. Nutrition.
6. Non-communicable diseases.
7. Environmental health in health facilities.
8. Support health services regarding to mental health and psychosocial support.

With support from different donors and coordination with the ministry of health, the WHO and other partners started supporting the provision of a minimum service package (MSP) at the district level in hundred thirty-five districts, particularly in inaccessible areas(40)(42)(41).

2- Health services at the secondary level:

Health services at the district hospital became a part of the MISP framework(40) also the MOPH, proposed in 2019 the national hospital's guideline, a set of services, which supposed to be provided at district hospitals and governorate hospitals, mainly they have the same service which was proposed before 2015 (38).

3- Health services in tertiary level and specialized centres:

Proposed health services in tertiary and specialized centres are described in detail in the 2019 national guideline for the hospitals, which have mainly the same aspect of health services as before 2015. Most of the health facilities in this level, like other levels, lack equipment, medical supplies to provide such services(43), currently some INGOs such as the WHO(44) and UNFP(45) started to support some specialized services like dialysis, emergency obstetric care but did not meet the need(43). Health services are not totally free at this level (46) also from my personal experience some medicines should be bought from outside the hospital.

3.1.1. Analysing health service package before and during the war:

Health services before war had not defined well, it was described in some guidelines but was not tested on the field in reality(33). In addition, when we compared with the burden of the diseases which was still high it means those services do not meet the need, all the services in the rural area are primary health services while the secondary health services are in the cities. This means the people in rural areas cannot get the services on time when they need and should travel to the cities to get the service. During the War MOPHP updated some guidelines, which describe the health services at each level but still those services only on papers. Practically MOPHP cannot provide those services in public health facilities in this situation with lack of resources. In the same time health cluster define another package, minimum service package, which is still unclear if it is developed based on the needs, burden of the disease and health outcome, or only based on the available financial resources of external funds, since some important services in the secondary and tertiary level not included.

3.2. Population coverage of essential health service

Coverage of essential health services is one of the indicators of SDG, goal 3, which is defined as an average of covered essential services, which stands on a type of intervention as; immunization, reproductive health, antenatal and postnatal, newborn and child health, communicable and non-communicable diseases and capacity of access to the services(32).

3.2.1. **Population coverage of essential health service before the war**:

1. <u>UHC Index Value with some tracer indicators:</u>

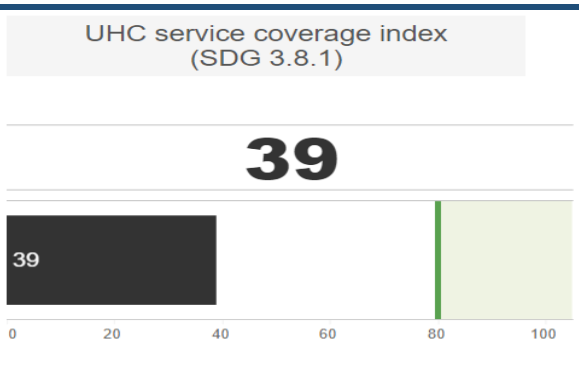


Table 2. UHC scores for conflict-affected countries

Country	WHO/World Bank UHC indicator score* (/100)	Country	WHO/World Bank UHC indicator score* (/100)
Afghanistan	34	Myanmar	60
Central African Republic	33	Somalia	22
Chad	29	South Sudan	30
Democratic Republic of the Congo	40	Sudan	43
Iraq	63	Syria	60
Mali	32	Yemen	39

* Value of 100 denotes full coverage.
Source: WHO/World Bank Group[29]

Recent values up to 2015	From 2000 up to 2015

Figure 7UHC index for service coverage, source WHO website.

The WHO uses the UHC index for service coverage, to track the UHC and to monitor the 3.81 SDG indicator; it is an indicator for the population coverage of basic services coverage, based on several indicators(32).

There was a gap in terms of service coverage; the data shows that Yemen had a 39 value in the UHC index up to 2015, which means that around 6 persons out of 10 persons, were almost not covered with essential and basic health services, which is still far from the expected value (80 UHC index) (29).

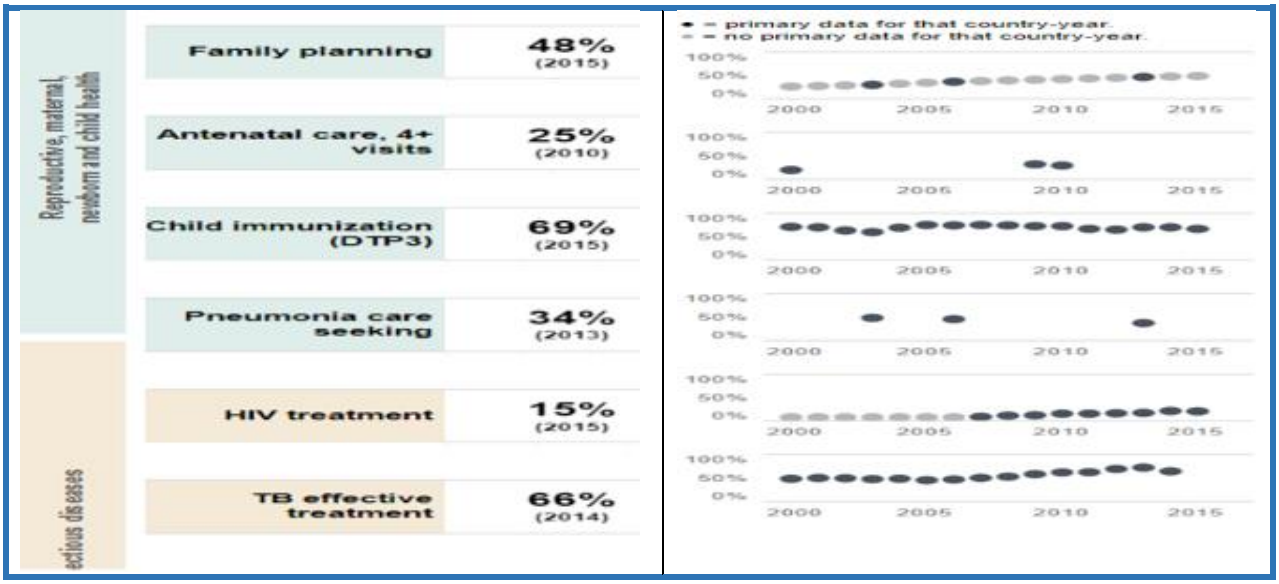


Figure 8 service coverage

There was an improvement in family planning, HIV and TB treatments over the years; from 2000 up to 2015, (see figure 8) however they are still low like other indicators.

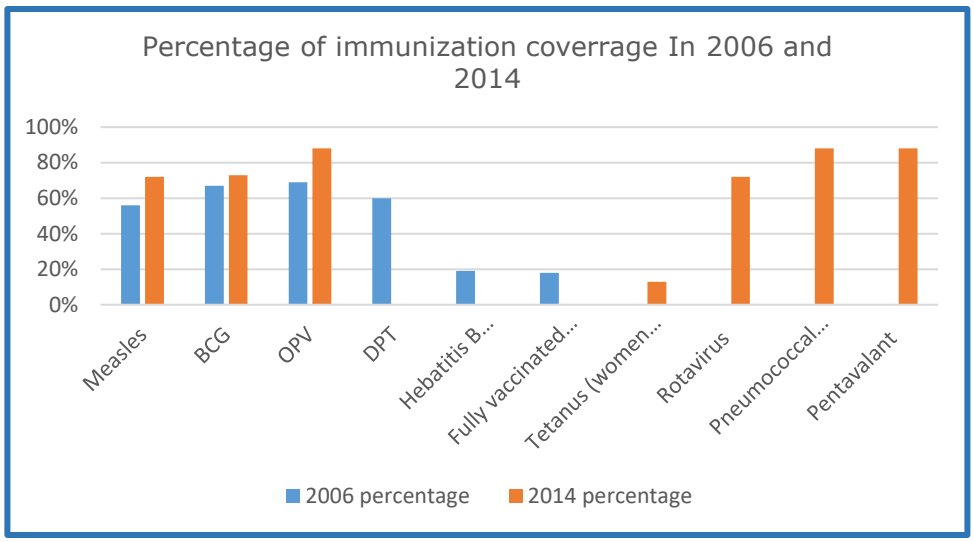


Figure 9: immunization coverage in 2006 and 2014

BY comparing the Percentage of immunization coverage in 2006(47) and 2014(16)in figure 9, there are some indicators that show that there is improvement between 2006 and 2014, but some are still low, such as measles and the rotavirus. There is also a significant gap, in terms of coverage, of the tetanus vaccine, among women of reproductive age.

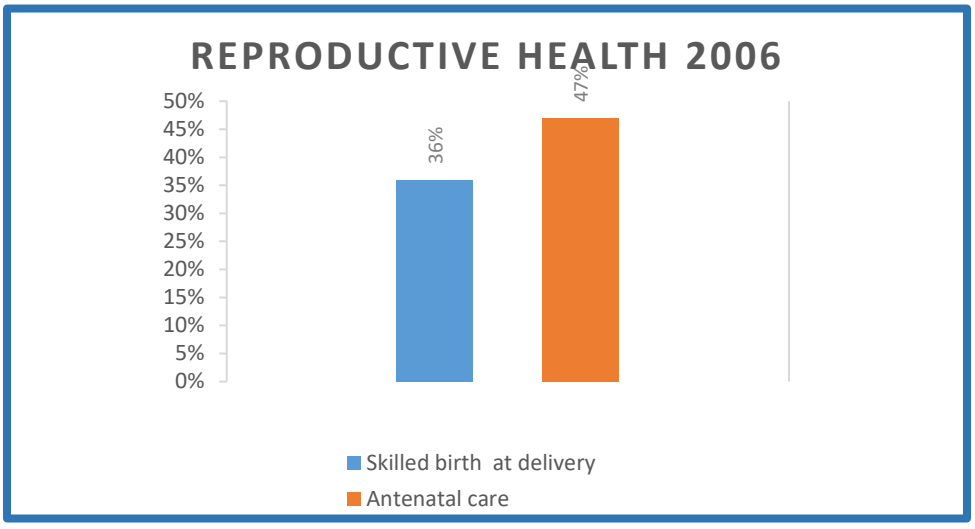


Figure 10 Reproductive health indicators

The indicators of reproductive health are very low; antenatal care is 47% while only 36% of the women delivered with skilled birth attendance in 2006(47)(see figure 10).

2. Access to health service and distribution of health services and workforce:

Access is one of the main things, which has an effect on people coverage of health service. There are many problems and challenges, regarding access to health services in Yemen, the geographical nature, long distances, and the unpaved roads, which consist of 80% of the total roads are considered as one of the main obstacles to access the health services. As well it possibly relates to several other factors such as social norms and the level of awareness and education and ability of a family to pay for the service(20)
Women face many problems to get health service, as they do not want to go alone and need to get permission to go for treatment, need to get money for treatment, have to travel a long distance to the health facility, are wanting a female health service provider. Around 90% of women have concerns about at least one of those problems(10).

Based on the last statistics before the war, the total number of public health facilities in Yemen were 3853; 237 hospitals, 842 health centres and 2774 health units(16) There is a misdistribution of health facilities in Yemen mostly they are not built based on the need (16).

About 35% of the population cannot access the services timely when they need them, 32 % of the total population have a lack of access to healthcare services, while healthcare service is limited to the rest of the population(48). There also are dissimilarities between urban and rural area, people living in rural areas have access to health services less than the urban area (49).

The total number of health staff, from the last report, before the war in 2014, was 74,224 persons, 68.3% male and 31.7% female, which show that there is no gender balance (50)

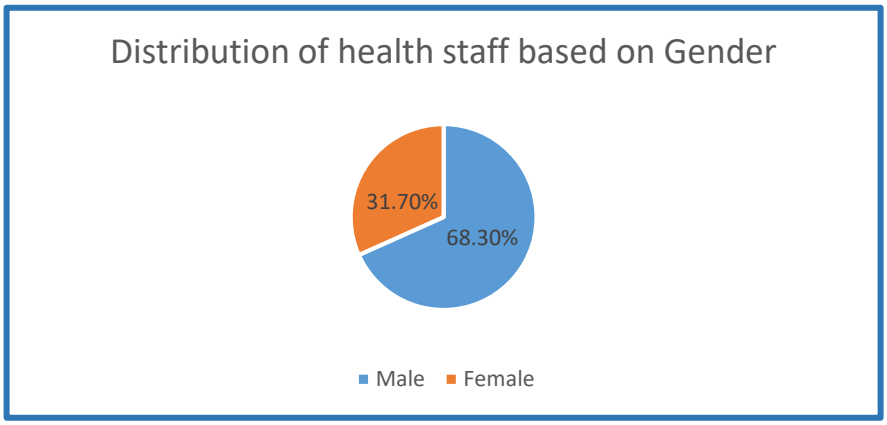


Figure 11 Distribution of health staff based on Gender

3. Quality of health services:

Yemen had challenges to ensure good quality of healthcare service(33)in the long term (51), the quality of health services is one of the issues mentioned in the strategy which needs to take actions to improve (16). Some processes were started to improve the quality of health services, such as a prepared and developed national health policy strategy for 2010 -2025 (16). In 2015, there was an updated and adapted plan to ensure better coverage of essential health services with financial risk protection and decreased health inequity. At the same time there was progress to update and improve the essential service package, however it was not

finished due to the war, which also prevented to implement the strategy as well(34)(52). The main challenges regarding to improve quality of care are (16)(18):

- Governance and leadership: The main dilemmas to ensure quality of health care services are; weak leadership and weak health planning and lack of coordination from centre levels to district levels also gaps and overlaps in the regulation, unavailability of quality of care standards guidelines, that should be used to ensure the quality of health care services.
- Health services: lack of medicines and other medical supplies, low coverage of health services.
- Infrastructure and health technology: lack and misdistribution in health facilities, lack of equipment and a poor health information system.
- Health staff and training: lack and misdistribution of health staff, low qualification of health staff, absence of performance management and movement of qualified staff to the private sector(53).
- Financial resources: lack of financial resources and poor financing mechanisms.

3.2.2. Population coverage of essential health service during the war:

1- UHC Index Value with some tracer indicators

The last update for the UNC Index was in 2015, after 2015 there are no updates regarding the UHC Index. In this is section, I will try to review the most relevant indicators to get a clear view about the coverage of health services after 2015

1- Vaccine coverage in Yemen :
vaccination coverage after 2015 decreased for all types of vaccines due to disruptions of the immunization supply (54).

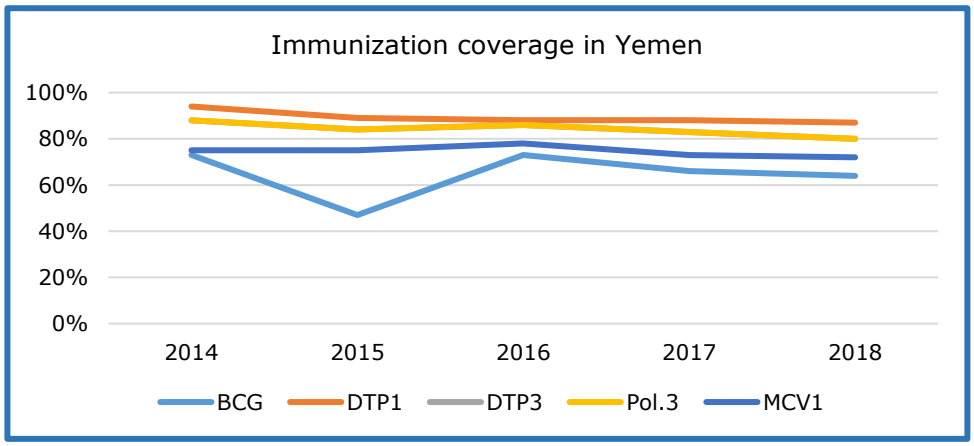


Figure 12 Immunization coverage from 2015 to 2018

Figure 12 shows that all vaccination coverage from 2015 up to 2018 decreased (55)

2- Nutrition services coverage is low in many places in Yemen, there is also inequitable distribution of nutrition, like treatment of severe acute malnutrition (SAM), moderate acute malnutrition (MAM) among children and pregnant and lactating women, supplementary micronutrient powder, and infant and young children feeding services

(see figure 14,15) and (index 1,2,3,4,5,). It shows there are some areas fully covered and huge gaps in other areas. (56), in compared with other nutrition services coverage (see the maps in the annex) it is clear that the southeast area is less coverage than others

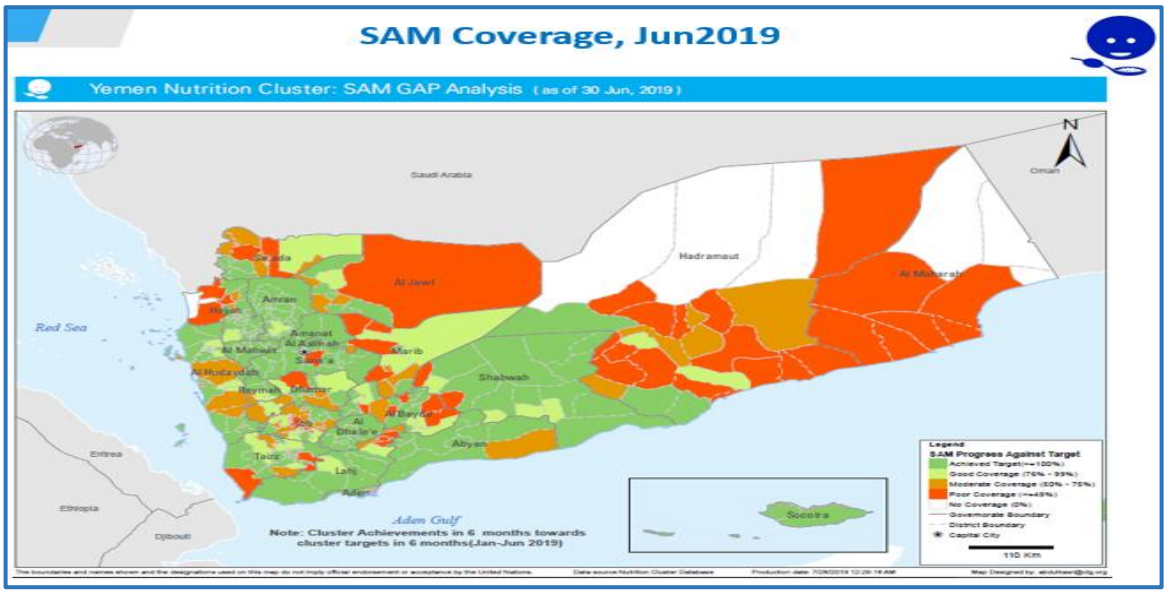


Figure 13: SAM coverage

Performance of nutrition programs in Yemen

Program	People in need	Cluster Target	New Admission	Vs People in Need	Achieved Vs Target
SAM	357,487	285,990	157,978	44%	55%
MAM	1,518,890	937,878	259,584	17%	28%
PLW	1,140,532	639,210	268,016	23%	42%

Figure 14: Performance of nutrition programs in Yemen,

When we compare people in need with target peoples and achievement (see figure 4), it is clear there are around half of the people are missing.

Access to health service and distribution of health services and workforce

Based on the survey, conducted in 2016, for 3507 health facilities, it was found that 1579 (55%) of them are fully functioning, 1343 (38%) are partially functioning and the remaining 504 (17%) are closed or damaged (57). The data in 2019 shows that 51% of the health facilities are fully functioning, 35% partially functioning, and the reaming 14% of health facilities are not functioning (see figure 17) (58). The surveys also indicated that there is a significant disparity in the distribution of services, among the governorates, including also health facilities and health workers (57).

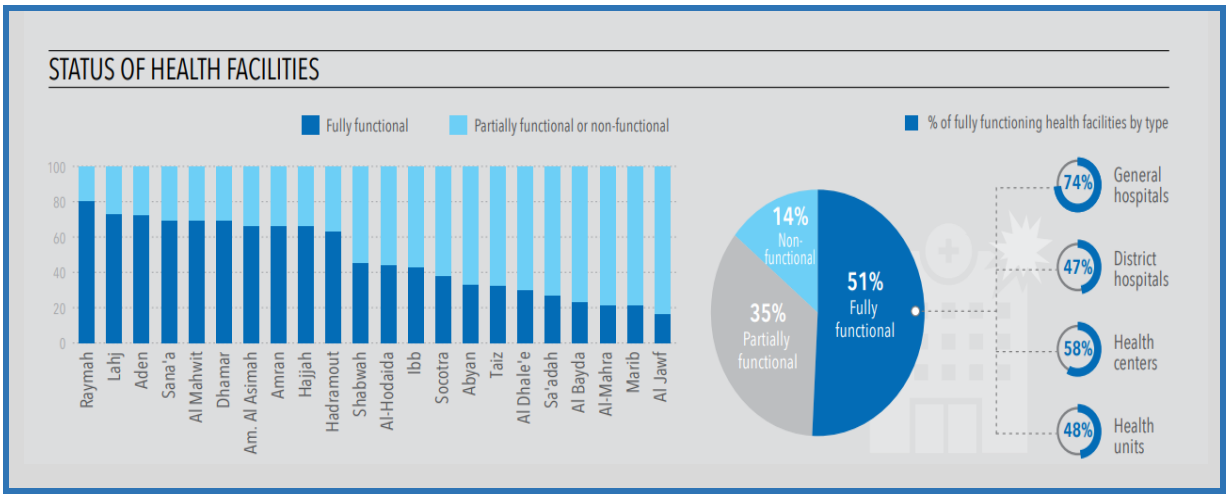
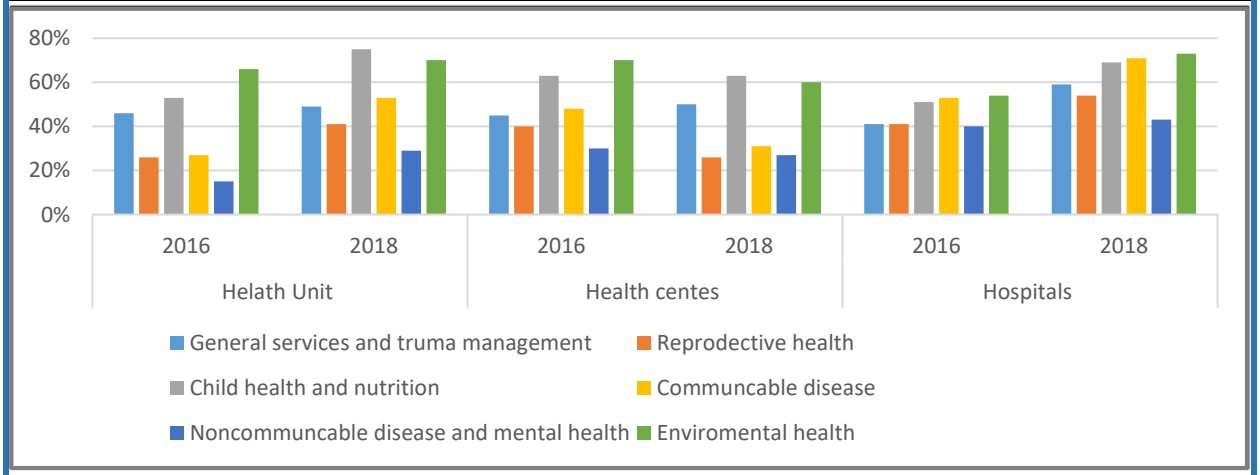


Figure 15: Health workers density and distributions in the country

Source: Yemen Humanitarian needs overview 2019 (58)

Availability of health services in functional health facilities, there are some increments between 2016 and 2018, however, there is still a gap in terms of service availability of all services. (See figure 17)



	Health Unit		Health centre		Hospitals	
	2016	2018	2016	2018	2016	2018
General services and trauma management	46%	49%	45%	50%	41%	59%
Reproductive health	26%	41%	40%	26%	41%	54%
Child health and nutrition	53%	75%	63%	63%	51%	69%
Communicable disease	27%	53%	48%	31%	53%	71%
No communicable disease and mental health	15%	29%	30%	27%	40%	43%
Environmental health	66%	70%	70%	60%	54%	73%

Figure 16: Availability of health services in functional health facilities in 2016 and 2018

Among all the health facilities, the health cluster supports only 2,868 health facilities, to keep health services running in those facilities(23), (see figure 17):

Health facilities supported by health cluster	
Type of Health facility	Number
Health Units	1,756
Health Centres	907
District Hospitals	112
Governorate Hospitals	17
General Hospitals	57
Specialized Hospitals	19
Total	2,868

Figure 17: Health facilities supported by health cluster

Availability of health staff is one of the challenges during the war, most of the staff left the health facilities due to the security, challenges of access and lack of salary, the remaining staff depended on monthly incentives paid through UN agencies, INGOs and local health partners to ensure keeping the health services running in supported health facilities (23). Based on the last survey conducted in 2016; it was found that among 276 districts, there are 49 districts without medical doctors, 46% of the districts have two medical doctors or less (59). Only 43% of health facilities can provide proper management (diagnosis and treatment) for infectious diseases. There are also only 6.2 beds/10000 persons in the hospitals (WHO recommendation 10bed/10000)(59).

In (the figure 19), it shows there is a difference in term of distribution of health staff among the governorates and it is an indication of misdistribution of health staff, the density of health workers among 19 in governorates in 22 governorates are still less than the standard in most of the governorates (58):

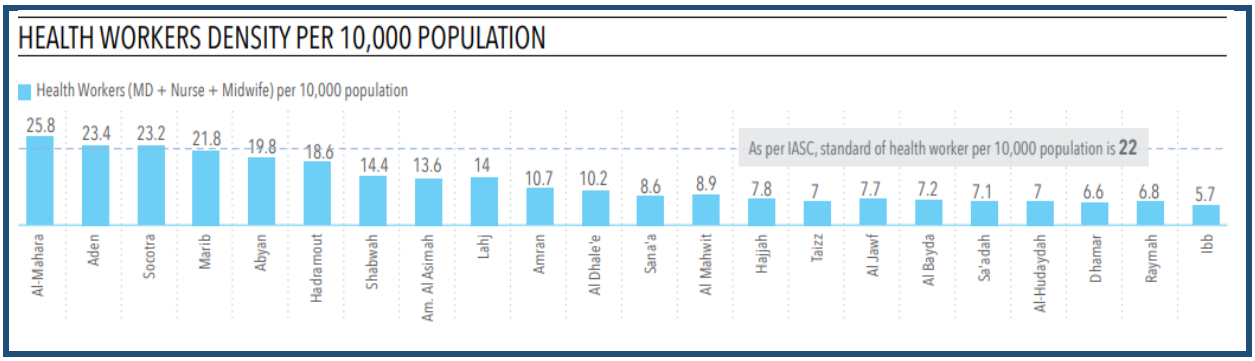


Figure 18: health workers density for 1000 population
Source: Yemen Humanitarian needs overview 2019 (58)

2- The security situation and access to health services

The deteriorating security situation, resulting from the war in Yemen, has left an impact on the health system, to provide health services to most of the beneficiaries as well as limiting access of the beneficiaries to health services and causing a low rate of service coverage. The war with the siege on Yemen clearly had a negative impact on the health status in Yemen(54).

Studies have shown that there is a relationship between low coverage of immunization and conflict and some outbreaks due to the collapse of vaccination chains(60), which impacted on the health of child and mother. The war had an effect on infrastructures and left 15% of the facilities closed or destroyed(58). The war and the conflict, as well as the siege on Yemen, had an impact on access to health facilities, for supply with essential medicines and needed operation materials(61).

Quality of health services:

With the challenges faced before the war, the situation experienced new challenges for the quality of health, like the lack of medicine and medical supplies, poor management and the absence of regulations and standards (51). After 2015, the health system collapsed and it was even unable to pay the salary for the staff, (62) there is also an association between the increased mortality rate and the low-quality health service(63).
However, there is still some effort from MOPHP and INGOs to increase the quality of the services:

- Recently in 2019, the MOPHP finished and polished several standard guidelines for hospitals, health centres, health units, blood banks and laboratories to step forward to improve the quality of health services(38). In addition, the health cluster developed standards to ensure the quality of care for MSP, in addition to some international standards, that uses during human aid, such as the Sphere standard and the minimum initial service package (MISP).
- Quality of care standards for a minimum service package, which is developed by the health cluster, with cooperation of the MOPHP, for using by the health providers, aiming to provide quality health care services. Additionally, many organizations have coordinated through health clusters to support MSP in the health facility with a strengthened referral system from primary health facilities to tertiary levels (40)(42)(21).
- The Minimum Initial Service Package (MISP): developed by UNFPA, is aiming to standardize the services of reproductive health during the crisis, with five main objectives; to ensure good leadership and implementation, arrange to prevent and treat sexual violence consequences, prevention of maternal and neonatal diseases, decrease transmission of HIV, ensure integrating of comprehensive sexual and reproductive health with other primary health care services

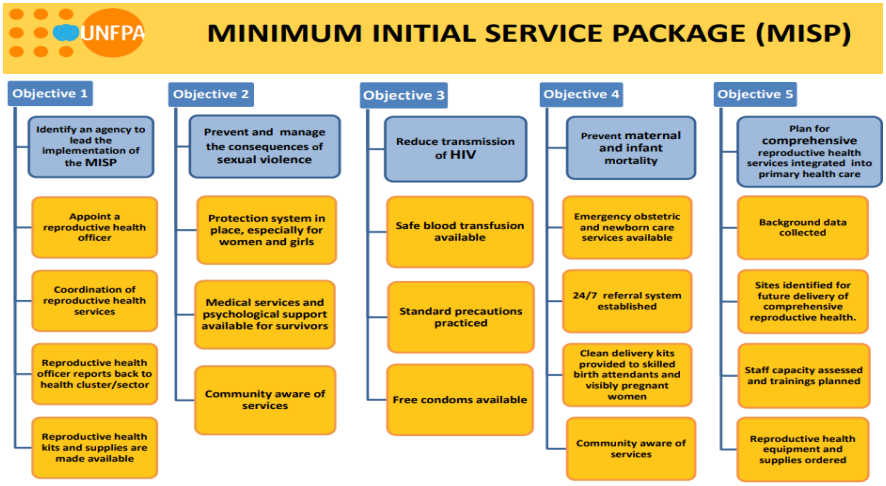


Figure 19 Minimum initial service package, Source UNFP (64)

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- Sphere standard for health action: Sphere standard for health gives guidance to all actors who work in the humanitarian response, to identify the priority health care and give rights to the population in affected areas, to receive quality service with dignity and it helps to recognize and is mentoring the people needs (65).

3.2.1. Analysing population coverage of health services and during the war:

Population coverage of health services before the war was low due to many reasons such mismanagement, which is clear when there, are misdistribution of health facilities and health staff. Also, the coverage due to the unavailability of health services and some social norms. The quality also was poor, after the war population coverage of quality health services gets worsen, due to closed and damaged many of health facilities. The low coverage also due to security situations and lack of resources. The low coverage left an impact on general health status, it is clear that burden of the disease increased during the war more than before. diphtheria outbreak and cholera have occurred during the war, One of the causes of the increasing number of diphtheria is a decreased vaccination coverage besides other factors, there are as well associations between the situations of conflict and increase the number of some disease (66).

During the war, the way of services delivery changed than before with present INGOs, which has new approach and different way to provide health services. From my personal experience, there was an approach from the health cluster at the beginning of the war to increase the coverage by supporting mobile clinics to provide primary healthcare services in the villages, which are far from health facilities. However, this approach failed, because most of the health workers left their work in the health facilities and joined to mobile, clinics because they receive paid from INGOs. After that, MOPHP recommended stopping this approach and support to use outreach activities approach, which focused to use health facilities staff to mobilize health services from health facilities to the community for two days per week to cover those areas, which are far from health facilities. such an approach can improve health outcome(67)but the sustainability is unclear especially when INGOs stop support such kind of activities.

3.3. Financial protection:

Financial protection is one of universal health coverage dimensions that aims to provide good quality health services, based on the need of all the population without exposing them to financial risks related to health care(68). In this section, I will try to get an overview and compare the change regarding to financial protection before and after 2015.

3.3.1 Financial protection before the war:

1- <u>Catastrophic expenditure of health:</u>

Catastrophic expenditure of health is considered; if a household spends either equal or more than 10% of his monthly income on health needs (69) or out of pocket expenditure is more or equal of 40% of the ability to pay(70).

Before the war, the data showed that 17.1% of the population who spend on health more than 10% of their income and 2.4% of the population who spend more than 25% of their income on health(71). (See figure 20)

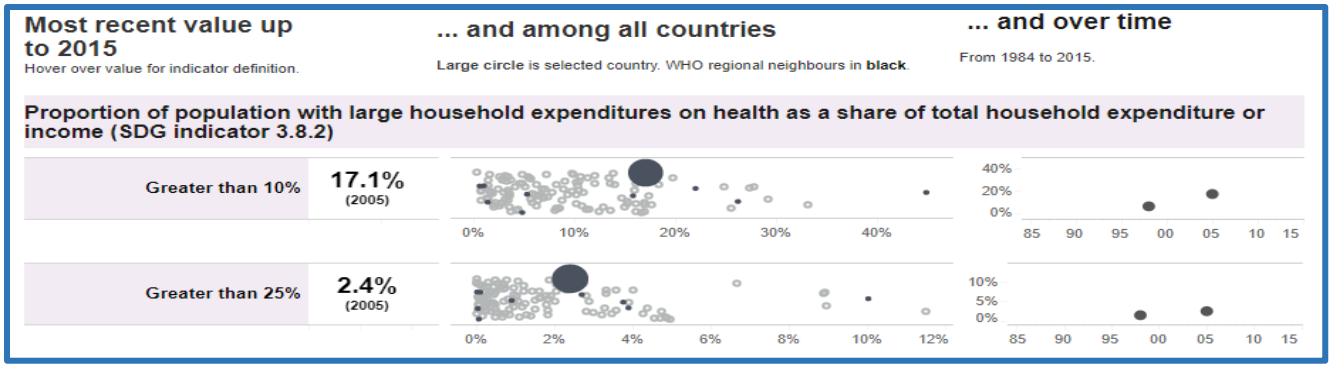

Figure 20: Proportion of the population who spend more than 10% of their income , Source WHO website (71)

2- Out of pocket payment:

Out-of-pocket payment has bad consequences for health outcomes as they prevent many people from accessing health services and may cause financial risks for many people, especially the poor, who are unable to pay for health services(72). The data shows that 55.4% and 75%(73) in 2008 and 2014 of health expenditure, are out of pocket payment which indicates that out of pocket payment is one of the main sources of health expenditure(74)

3- Spending on health from GDP:

The WHO recommended that the government should spend at least 5% of GDP on health (75), in Yemen before the war, total expenditure on health was 202 USD per capita and the spending on health was 5.6% of GDP(76) which was 28% of the total health expenditure(20)

4- Pooled humanitarian fund:

From 2011 up to 2015, the need for health and nutrition was between 38.8 and 62.7 million(77). See figure 21

Pooled humanitarian fund for health and nutrition in Yemen (in million)

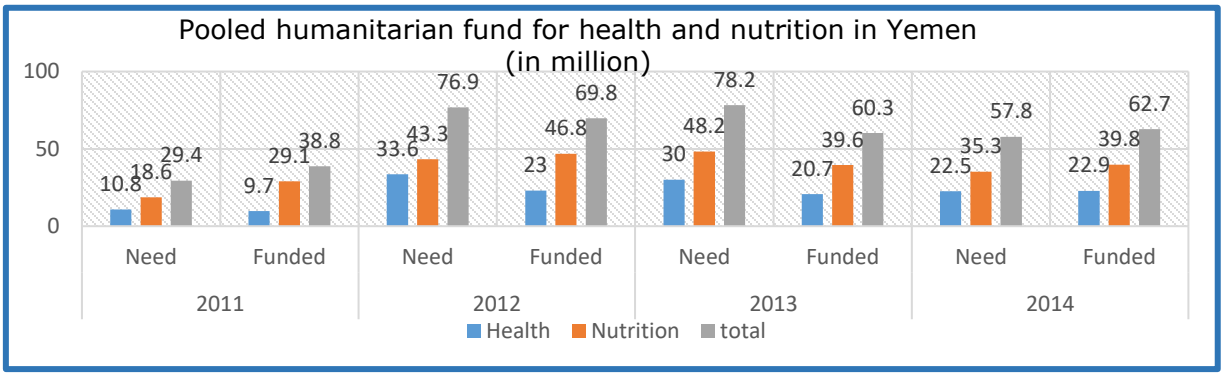

Figure 21: Pooled humanitarian fund for health and nutrition in Yemen (in million)

3.3.2 Financial protection during the war:

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1- Catastrophic expenditure and out of pocket:

During the war, there is no clear data that shows the percentage of households that spend more than the 10% of their income on health, but what is known that in 2018, around 22.2 million (80% of the total population) was in need for some kind of humanitarian support(78). An estimated 19.7 million (65% of the total population) needed a health intervention, 71% of them had acute needs(79). In addition, the data showed that after 2015, the household income decreased significantly; the GDP per capita declined from 1119 USD in 2014 to 667.9 USD in 2018(78), (see figure22). Furthermore, the poverty increased from 78.6%, before 2015, to reach 84.5% in some governorates after 2015, which means that most of the people are not able to pay for health services in Yemen(80)

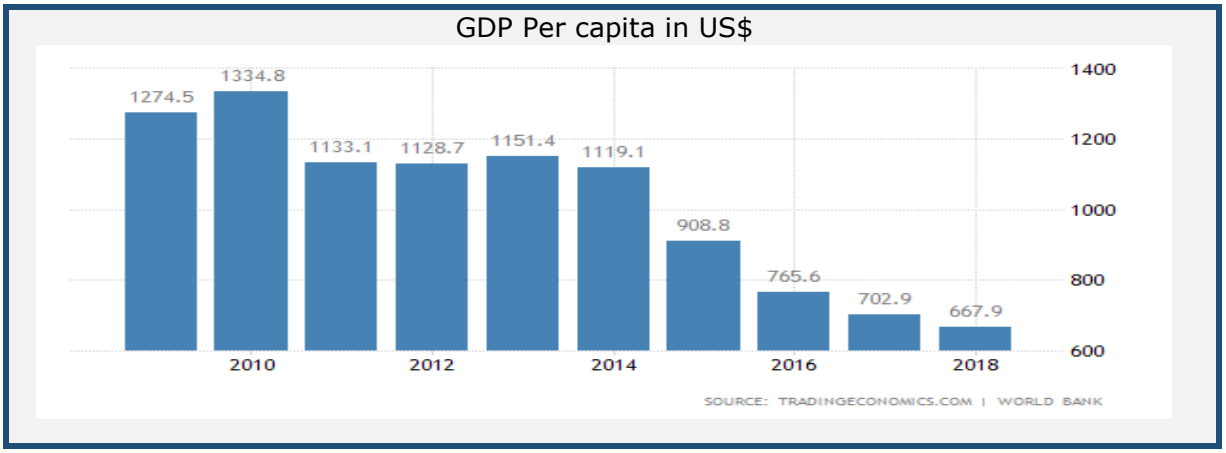

Figure 22: GDP Per capita in US$

Spending on health from GDP:

There is no clear data that shows how much is still spent on health from GDP during the war, but what is known is that the health system collapsed and even the government could not pay the salaries (62). The data also shows the GDP growth significant declined from 2015 up to 2018(81)which led to an estimated 49.9 billion USD cumulative loss in GDP from 2015 to 2018 (82) war

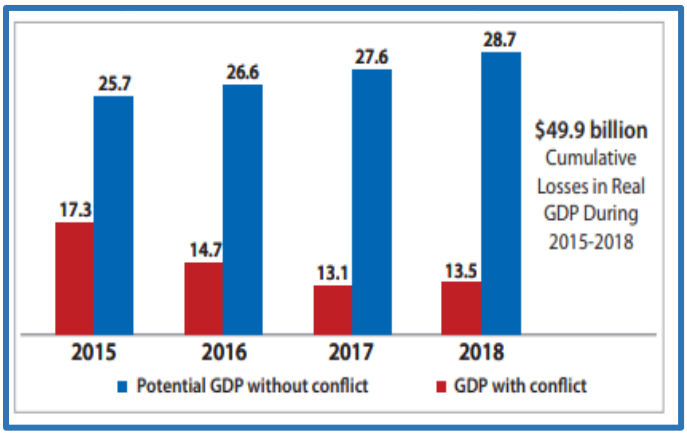

Figure 23: Cumulative loss in real GDP- sources: ministry of finance(82)

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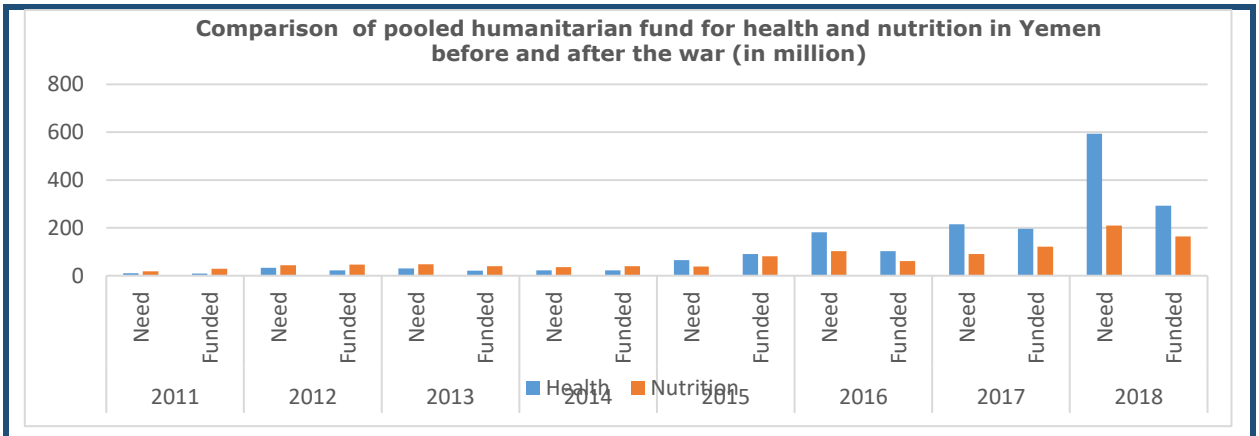
2- External funds:

The data shows that there is a significant increment of the needs in humanitarian pooled funds in health and nutrition from 2015 to 2018. There are still gaps between the need and actually funded (see figure NO.25).



	2011		2012		2013		2014		2015		2016		2017		2018	
	Need	Funded	Need	Funded	Need	Funded	Need	Funded	Need	Funded	Need	Funded	Need	Funded	Need	Funded
Health	10.8	9.7	33.6	23	30	20.7	22.5	22.9	65.9	91	182.3	103.1	215.2	196.4	593.6	292.5
Nutrition	18.6	29.1	43.3	46.8	48.2	39.6	35.3	39.8	38.5	81	102.9	60.8	91.1	121.3	210.3	163.8
total	29.4	38.8	76.9	69.8	78.2	60.3	57.8	62.7	104.4	172	285.2	163.9	306.3	317.7	803.9	456.3

Figure 24: Compression of pooled humanitarian fund for health and nutrition in Yemen before and during the war (in million)

Data shows that there was a need for a humanitarian fund before 2015, which was quite stable, while after 2015 there are significant increments, there is still a gap between the need and actual funded (See figure 26).

3.4. Challenges regarding financial Mechanism:

Before 2015, the government was facing many challenges regarding financial mechanism; the allocated budget and financial management and accountability, there were mismatching between proposed budget and real expenditure, weak tracking, and evaluation in addition to a long process between bottom levels to the upper level for budgeting. There was a weakness in technical capacity; the policy for decentralized financial management was not well followed. Due to the lack of transparency, many health facilities did not receive their budget, which forced them to close and cause an interruption of services. There was a fragment in the budget and financial management, as in vertical programs and donor funds, the absence of a long-term budget and lack of proper reporting, mentoring and evaluation also an unintegrated donor fund with a general budget, were also the most challenges(20). After 2015, with a critical situation, it experienced additional challenges and became a collapsed health system(83).

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3.5. Equity in UHC:

Equity is one of the main things of UHC, to ensure that all people can receive the health services they need when they need it without financial hardship. The equity is one of the issues for health in Yemen in the long term; Around 35% of the population, before the war, faced difficulty to access health services(20). There are also inequities on several sides; inequity appeared in the geographical distribution of health facilities, health services and health staff between urban and rural areas and between the governorates. Lack of female staff is one of the issues as well; around 68% of health staff are male, while 32% of the staff are female(50). The women have less chance to get health services because, traditionally, the women in Yemen don't prefer to go for health services, if the service provider is male or if a man from the family does not go with her to the health facility (18). Furthermore, only about a third of births happened with skilled birth attendance(84). Inequity between poor and rich is one of the issues as well; around 30% of health expenditure for treatment is outside the country for a small group of people (85)(only those who have an ability to travel outside the country)(48). Furthermore, the children in the rich group are likely 1.5 likely to access for treatment of acute respiratory infection than those who are poor and six-time received immunization than those who are in the poor group(84). The high cost of health services could prevent poor people to get the services. (53) After 2015 there are internally displaced person IDPs; recent data show that women and children are making up 83% of IDPs and they are more needy people(58). The data shows there is an inequity in terms of public expenditure, between the governorates, relative to their population, for example, Aden has 8% of the total population and spent 12% of the total public expenditure while Hajjah has 8% of the total population and spend only 3% on total public expenditure(20).

3.6. Analysing financial protection before and after the war:

Before the war, there was a round of 17% suffer from catastrophic expenditure, during the war there are no precise data what is the percentage of people who suffer from catastrophic expenditure of health, however, the data shows there is significant decrease in GDP per capita and increase of poverty led to increase in number of people in needs. When we link this thing with the coverage of health services, which is low, it means that most of the people should travel to get service from area, not covered, to get the services from another area. When required to travel it means they should pay more and will expose them more for financial hardship. In link with the service package, which becomes less, which means they have to pay for other services especially those services in secondary and tertiary levels which not covered and usually more expensive, then again will expose them more for financial risk. Furthermore, inequity issue will be more, because some of the people will be excluded from health services due to inabilities to pay. The sustainability for services supported with donor funds is also unclear because when they stop the support, health services will go down then the people will expose again more for catastrophic expenditure.

3.7. Best practices:

During the fragility find perfect best practices is difficult science the three dimensions change from time to time base on the situation and the fragility different from place to place.

3.6.1. Service package:

Service package can be defined based on the current situation of the health system and the people's needs for health services and the outcome of public health. It can start from essential services of primary health care; those services are related to maternal and child health care, nutrition, immunization, emergency services, diagnosis and treatment of some communicable diseases and trauma treatment for those affected by the war. The same happened in Liberia(20). Then, the service package can be gradually expanded to include the rest of the services, based on clear criteria, that ensure cost-effectiveness, the outcome on public health, equity and protects the people from financial risk(20). In addition, Afghanistan has the same example for a basic service package with ensuring equity, quality, and cost-effectiveness.

3.6.2. Population coverage of health services

In countries with a crisis, usually, financial means are one of the challenges to ensure good implementation and coverage for all of the people with health services(86). However, there are some ways to increase coverage such as:
Integrate some services through non-governmental health care providers in order to increase the geographical coverage of health care during crises. Some challenges could appear, such as implementation problems, in terms of the inability to manage and track service providers. It could also lead to the migration of health workers from the government sector to the private sectors, such as non-governmental organizations, as shown in Congo and Afghanistan(20). It is therefore recommended to analyse these challenges during the crisis when they appear and address those problems after the end of the crisis(20)

Also using community health workers to provide health services in the areas which are far from health facilities to increase the population coverage of health services and this can lead to improved health outcomes (87)

Civil society is an essential pillar to ensure equity in the distribution of resources and services and that all people are included in health services without financial risks. In this situation, like Yemen, they may have a weak position. In order to play such a role however, external aid is very important to improve the role of civil society through capacity building and more advocacy to provide such a role. For example, in Uganda, the civil society received international aid and succeeded to expand the HIV program in the country, although there was traditional opposition to such programs(20).

3.6.1. Financial protection

Good coordination and transparency play a big role in getting donor support. Some countries achieved great successes through many strategies to increase the coverage by donors funds(20)

For example, in Rwanda, significant progress has been made in expanding health services through community health insurance, which has contributed to improved user fees and improved health care(20). In Cambodia user fees have been eliminated with support from donors, to fill the gap which led to an increase of the coverage(20).

Poor management may lead to misuse of external funds without reducing the health expenditures, for example, in Sierra Leone; the free health care initiative increased the use of other services and did not reduce health expenditure as expected(20).

In some cases, eliminated user fees may increase the informal fee the same what happened in Zimbabwe, in this case introducing affordable formal fees are very important and should be a less than informal user fee and may lead to reducing the out of pocket expenditure and improve transparency and decrease the dependence on donor funds (88). Finally, there is an urgent need to solve the problem of war itself, which is the main social determinant of health in such a situation(89). Proper coordination with social societies, INGOs and UN agencies to advocate removing the siege, protecting health facilities, and allow accessing medicines and medical supplies will solve many challenges to move toward universal health coverage.

Chapter 4: Discussion:

Based on what was found, most of the indicators, such as the UHC index, immunization, antenatal, postnatal, childhood illness like diarrhoea and malnutrition indicates that there is a deterioration in health services in Yemen before and after the war. After 2015, the situation is more exacerbated, the burden of the diseases increased, several cholera outbreaks occurred. The first wave started in three governorates then spread to the other governorates, there are fluctuations from time to time, since the outbreak started, due to the spread of cholera across the country, like what happened in Nigeria(90). In addition, the diphtheria outbreak occurred after 2015. In addition, the global acute malnutrition rate of Stunted in Yemen also increased from 33.1% before 2015, also significantly increasing numbers of acute malnutrition among the children under five years of age(91) to reach 15% of total children at 5 years of age(92). In addition to all those challenges, half of the total of health facilities were damaged or closed, which led to decreasing access to health services and population coverage and created extra obstacles for Universal health coverage. Using the WHO three dimensions of universal health coverage, helped to guide the research path and identified the most important aspects related to the service package and population coverage of health services and financial protection.

Identifying and introducing the health service package is one of the main pillars to achieve universal health coverage. When we need to develop any essential service package, we should think about many things, such as the burden of the disease in the country, health outcomes, the people's ability to pay to get this service. also available of resources and cost-effectiveness, which needs proper coordination and discussion with all stakeholders should be considered especially in this situation, there are new actors like INGOs and donors (93). By analysing the service package before and after 2015; it is clear that the health service package before 2015 was not specified and defined well(33). In addition, during the war, the MOPHP had an unclear plan for a proper service package, even though, there are some updated in the guidelines include describing for health services at each level. Those plant still in paper and seems will be difficult to implement such package in public health facilities without exposing the people for financial hardship, especially with lack of financial resources with MOPHP. While there was an initiative from the cluster to specify a minimum service package,

which also should be clearer. Most of the indicators of the disease were still high before and after 2015, which means those services packages don't meet the health needs.

Population coverage of health services refers to the people in need of health services, who get the service in reality(94). By analyzing the population coverage of health services before and after 2015, the indicators before 2015 indicated clearly to a low people coverage of health services; the UHC index, which is usually calculated based on multiple services indicators, was only 39% of the total population coverage, which means that six persons out of ten were not covered with health services. During the war the situation worsened as shown in many indicators; vaccine coverage decreased, also the burden of the diseases decreased during the war in addition to only 50% of health facilities fully functioning and the security situation affecting the access to the services and the supply chain. The health worker's density is very low in most of the governorates, which will decrease the population coverage of health services and the health outcome. a study has shown that there is a positive relationship between the health worker's density and the life expectancy and also between the population coverage of health services and life expectancy (75). The security situation, destroyed and closed half health facilities lack resources play a key role of decreasing the coverage. In this situation, proper planning and coordination with INGOs to consider equitable distribution and efficiency use for available resources will help to improve the coverage. Stability still unclear because most of the interventions support by donor will stop with end of the project unless MOPH start to plan in advance to take over by the end of the grant and try to find from now another sustainable plan to move to resilience stage.

Analysing financial protection before and after 2015, before the war there was a catastrophic expenditure, around 17.1 of the people paid more than 10% of their income on health also after 2015, based findings the problem worsened, since 80% of the population needed some kind of support and 65% of the population needed support for health. At the same time, the GDP and income per capita decreased.

Before 2015 the health expenditure relied on out of pocket payments. The data showed that there are increments of out of pocket payment; 55.4% and 75%(73) in 2008 and 2014 of health expenditure are out of the pocket payment, which indicates that out of pocket payments is one of the main sources of health expenditure(74). Increasing the health expenditure by out of pocket payment usually leads to many effects, some people can be excluded from the use of the services or have a loss of follow up when they are not able to pay or may need to stop to pay for basic needs like clothes or education to obtain health services(95).

Linking the findings related to the people coverage of health services, which indicates that there are almost 50% of health services not available in public health facilities. Usually, when the services are not available, some people will go to the private for-profit sector, which means they will pay more for health services and this will expose them more to catastrophic expenditure. Others who are not able to pay may not get health services(87).

In terms of public resources for health, which was 23% and external fund which was around 5% in 2007(20). After 2015, the health system clearly relied more on donor funds. At the same time, the humanitarian fund did not meet the needs, still, there is a gap in funding, which is still around 50% of the need in 2018(77)(see figure 24). Also clearly as shown, there was a need for an external fund, which was in the stable average before 2015, however, there are significant increments of the need of funds, starting from 2015 also there are still around 50% gaps between the need and what is already funded in 2018 (77).

It is clear that the Yemeni government has a deficit to cover health services, due to the war and the deteriorating economy, which caused a severe shortage of the budget, it has become heavily dependent on donor support to maintain the current health coverage(20).

There are three main drivers of catastrophic expenditure in such situations, all of them are present in a fragile setting; the beneficiary should pay to access for health services, inability to pay, absent of prepayment mechanisms(89). Currently in Yemen, as shows in the findings, 80% of the population in need, and 65% of the population in need of health. In addition 50% of health facilities not fully functions which mean around 50% of the population not covered with health service and they have to pay to get service from another place, therefore, most of the population during the war are exposed to financial hardship to get health services.

Chapter 5: Conclusions and recommendation:

5.1 Conclusion:

The overall objective of the review is to describe and analyses the universal health coverage in Yemen before and during the war, to make recommendations to respective health authorities and stakeholders to step forward to achieve universal health coverage in Yemen, I reached the following conclusions;

1- The Basic health service Package is the service that the government provides or wants to provide to all the population equitably, it is one of three dimensions of universal health coverage, in Yemen, the basic health service package is not defined well before and after 2015. The national health strategy for 2010-2025 did not include a clear definition of the service package. After 2015 there was an initiative from the health cluster to define a minimum service package, which is still unclear but it can take a step forward to define the package, which is suitable for the current situation based on the need, available resources, and health outcomes.
2- Ensuring that all people are covered with health services is one of the important things for universal health coverage, in Yemen, the population coverage is very low before 2015 and deteriorated even more after 2015, 39% of people were covered with health services before 2015, after 2015 most of the indicators referring to health services deteriorated more.
3- Inequity in terms of the distribution of health services, health facilities, health staff among all the governorates.

4- Quality of health services, which is one of the main objectives of universal health coverage, is very low due to the lack of clear policies, standards and lack of resources.
5- The security situation had an effect on the access to health facilities and led to closing or damaging many health facilities, only 50% of health facilities are fully functional after 2015.
6- It was found that there are increments of out of pocket payments; 55.4% and 75%(73) between 2008 and 2014 which indicates that the people suffer from financial hardship to have health services.
7- 17.1% of the population spent more than 10% of their income on health and 2.4% of the population spent more than 25% of their income on health in 2015, which is also one of the main indicators that these people are exposed to catastrophic expenditure.

8- After the war, there is no clear data shows how many people pay more than 10% from their income or how much out of pocket payment, however, It was found that 80% of the population needed a kind of humanitarian support. Also found that 65% of the total population needed health intervention; 71% of them are in acute need. Furthermore, the GDP per capita declined from 1119 USD in 2014 to 667.9 USD in 2018, which means that the financial status of the people become worse than before.
9- Before 2015, the health system had a lack of financial resources and some programs depended on donor funds, after 2015, the health system collapsed and relied more on donor funds.

5.2 Recommendation:

1- The MOPHP should define a health service package based on the current situation, the people's needs for health services, public health outcomes, and available resources. It can start from essential services of primary health care; those services are related to maternal and child health care, nutrition, immunization, emergency services, diagnosis and treatment of some communicable diseases and trauma treatment for those affected by the war. Focusing more on health promotion, disease prevention, and primary health care will save a lot of time and efforts and reduce the consumption of many health services. Then expanding the service package, gradually based on certain criteria such as what the people need, efficiency, health outcome, available resources, and health outcomes.
2- MOPHP and the health cluster should take action to ensure that all of the population have access to health services, by ensuring equity in terms of the distribution of health staff, health facilities and health services.
3- In the current situation, with a lack of health workers, the community health workers will play an important role to provide health services within the community to increase the coverage and protect the people from financial hardship.
4- Quality should be taken into account; the MOPHP in coordination with the health cluster should develop clear policies, guidelines, standards and work to increase the capacity building for the health staff.
5- The WHO should support the MOPHP to improve the health information system, which is very important to improve the quality of health services.
6- MOPHP and health cluster should cooperate with social societies and the international community for advocating to protect health facilities from airstrikes, protect health workers and remove the siege, to facilitate accessing medicines and medical supplies in Yemen
7- INGOs should take the concept of universal health coverage in the account during the humanitarian intervention for health, to ensure equitable health services for all without financial hardship.

<u>Recommendation for future-researches</u>:

1. Social determinants of access to health services in Yemen
2. Service package based on people’s needs
3. Improving Health financing in Yemen

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Annexes

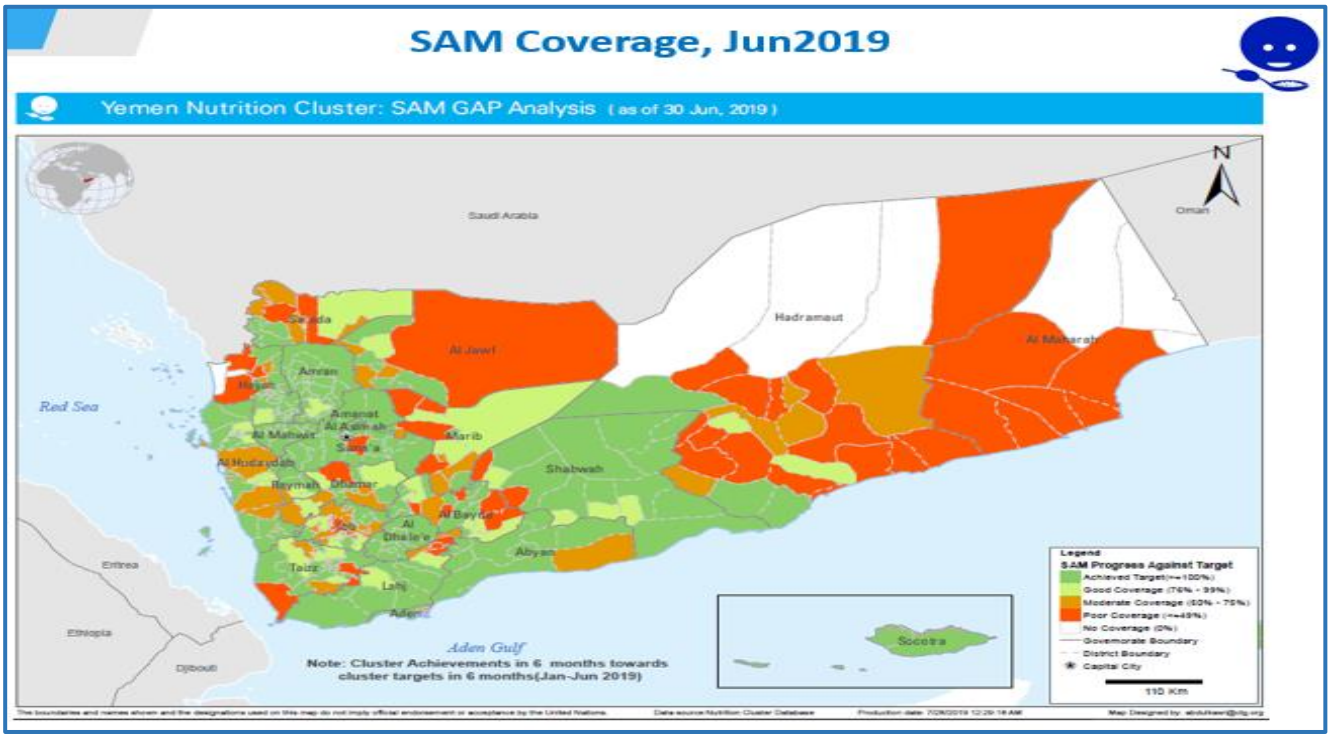
Anex1: minimum service package

MSP Service Delivery Sites and Levels of Care[1]

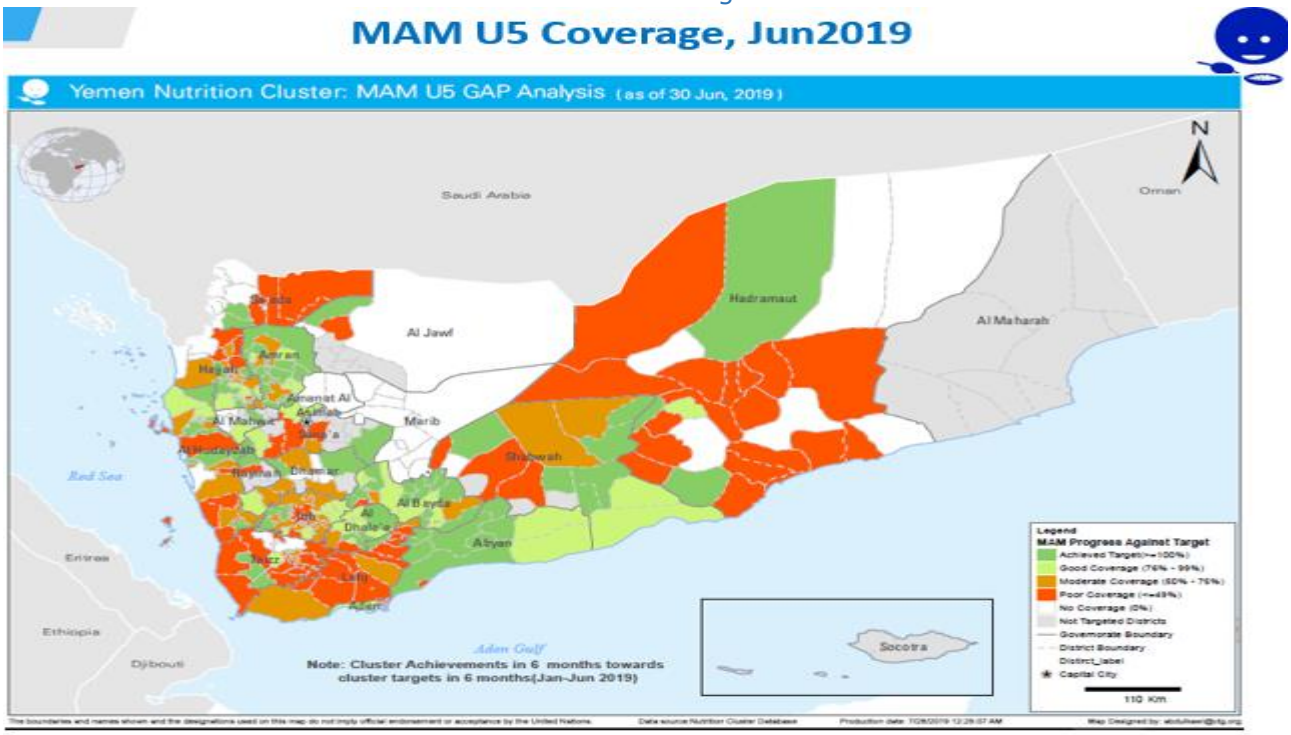
Level of Care	Facility/Service provision	Services
Community	*Home (CMF, CHV)*	Home visits, IEC, home deliveries
	Community facility (CHW, CHV)	Limited curative care, IEC, SAM screening and management. FP (condoms)
	Mobile Team	Limited curative care including IMCI, ANC/PNC, EPI, SAM screening and management, FP (short-acting methods), IEC
Primary Health Care	*Health Unit*	Limited curative care including IMCI, ANC/PNC, EPI, SAM screening and management, FP (short-acting methods), IEC. Refill of NCD prescriptions.
	PHC Centre	Curative care (OPD) including IMCI, TB and others, ANC/PNC, FP, EPI, SAM screening and management, NCD management. Normal Deliveries (selected facilities). Essential Newborn Care. Basic Laboratory.
Hospital	*District Hospital*	Curative care including OPD and Inpatient. Round-the-clock ER. IMCI, TB, NCD. ANC/PNC, Normal and complicated deliveries. BEmONC (selected facilities). EPI. SAM with medical complications. Basic laboratory. Essential Newborn Care + management of sick and LBW newborns (selected facilities).
	Inter-District Hospital & Governorate Hospital	Curative care including OPD and Inpatient. Round-the-clock ER with trauma care. IMCI, TB, NCD. ANC/PNC, Normal and complicated deliveries. BEmONC and CEmONC. Essential Newborn Care + management of sick and LBW newborns. EPI. SAM with medical complications. Laboratory and Radiology.

[1] MSP Final. May 2017.

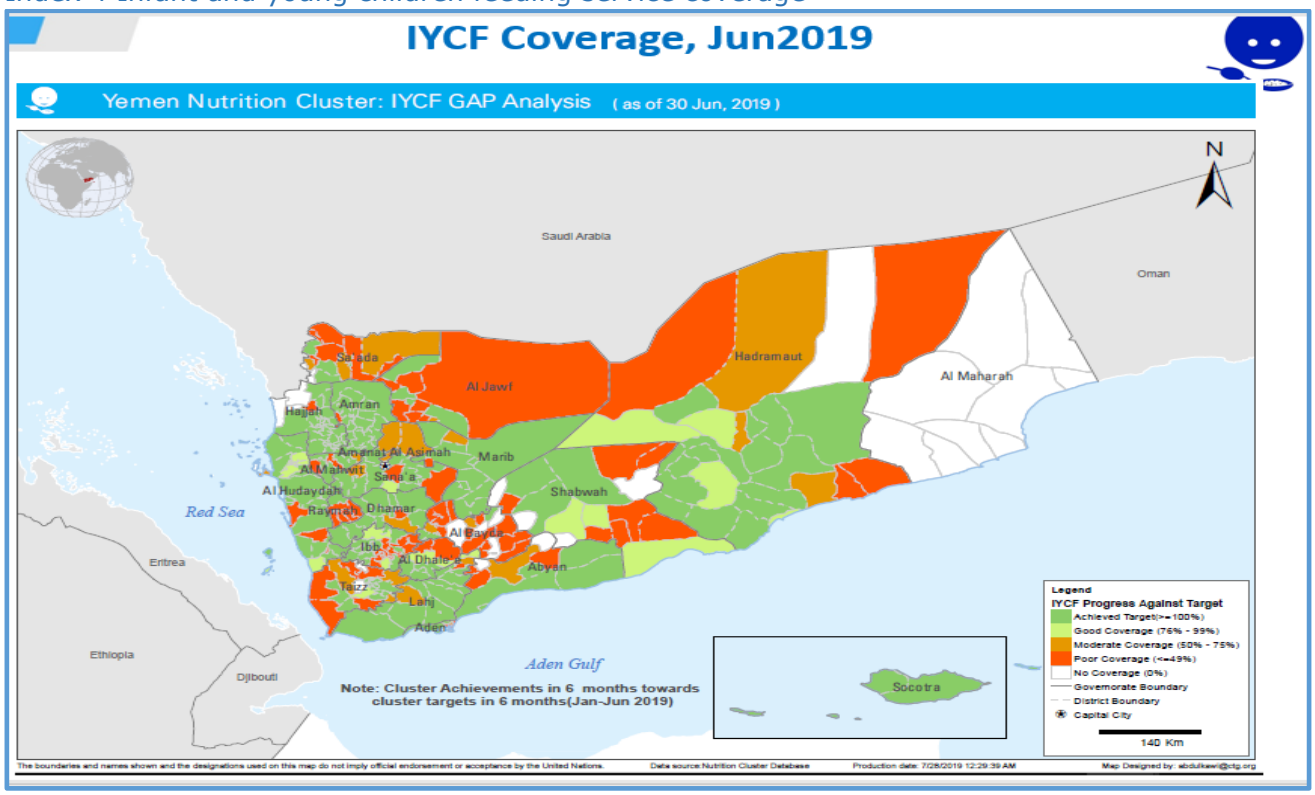
Index 2: severe acute malnutrition service coverage



Index 3: Moderate acute malnutrition service coverage

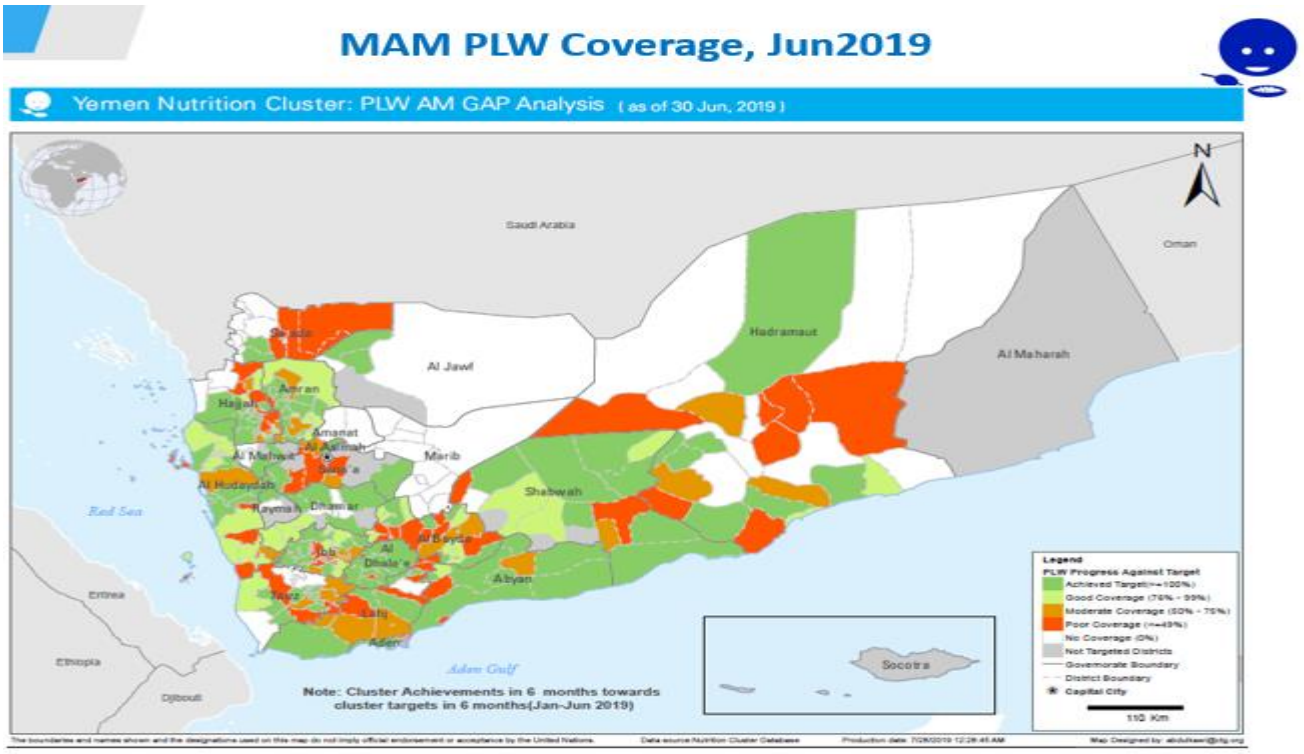


Index 4 Infant and young children feeding service coverage



Annex 5: service coverage for MAM PLW

Moderate acute malnutrition for pregnant and lactating women



Index 6 micronutrient powder