

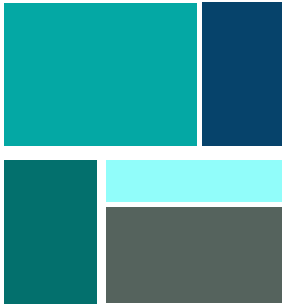
OIC HEALTH REPORT 2017



ORGANISATION OF ISLAMIC COOPERATION

**STATISTICAL, ECONOMIC AND SOCIAL RESEARCH
AND TRAINING CENTRE FOR ISLAMIC COUNTRIES**





OIC HEALTH REPORT 2017



Organization of Islamic Cooperation

**The Statistical, Economic and Social Research and
Training Centre for Islamic Countries (SESRIC)**

© October 2017 | Statistical, Economic and Social Research and Training
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ISBN: 978-975-6427-66-8

Cover and Inner design by Savas Pehlivan, Publication Department, SESRIC.

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ACRONYMS

AMR	Adult Mortality Rate
ANCC	Antenatal Care Coverage
CDs	Communicable Diseases
CSHF	Comprehensive Safe Hospitals Framework
DRM	Disaster Risk Management
DTP	Diphtheria-Tetanus-Pertussis
EAP	East Asia and Pacific
ECA	Europe and Central Asia
EDRMH	Emergency and Disaster Risk Management for Health
EMS	Emergency Medical Services
EPI	Expanded Programme on Immunization
EWEC	Every Woman Every Child
FCTC	Framework Convention on Tobacco Control
HSI	Hospital Safety Index
ICHM	Islamic Conference of Health Ministers
ICIC	Islamic Committee of the International Crescent
IDP	Internally Displaced People
IFRC	International Federation of Red Cross and Red Crescent Societies
IHR	International Health Regulations
LAC	Latin America and the Caribbean
LEB	Life Expectancy at Birth
MDGs	Millennium Development Goals
SDGs	Sustainable Development Goals
MENA	Middle East and North Africa
MMR	Maternal Mortality Rate
NCDs	Non-Communicable Diseases
NRCS	National Red Cross and Red Crescent Societies
OIC	Organization of Islamic Cooperation
PAHO	Pan American Health Organization
SA	South Asia
SFEP	Strategic Framework for Emergency Preparedness
SSA	Sub-Saharan Africa
U5MR	Under 5 Mortality Rate
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UNFPA	The United Nations Population Fund
UNICEF	The United Nations Children's Fund
WB	World Bank
WHO	World Health Organization

Acknowledgements

This report was prepared by a research team at SESRIC led by Mazhar Hussain and consisting of Cem Tintin, Kenan Bagci and Cihat Battaloglu. The work was conducted under the general supervision of Nabil Dabour, Assistant Director General of SESRIC and Acting Director of Research Department.

FOREWORD

The domain of health is one of the important areas of cooperation identified by the Organization of Islamic Cooperation (OIC) for joint Islamic action. This was in recognition of the central role of health in overall human development, socio-economic progress and poverty alleviation in the member countries. Healthy people have potential to contribute more significantly to economic progress, since they live longer and are more productive. As a basic principle, all people should have the right to access to health services equally irrespective of their social status or other socially determined circumstances.

Many OIC countries have recently paid special attention to the issue of health and development of modern and sustainable health systems through allocating more resources in health sector than ever before. However, while the people today are healthier, wealthier and live longer than 50 years ago, many low income and least-developed member countries are still seriously lagging behind in terms of primary health care coverage. This is especially clear in the developing regions of South Asia and Sub-Saharan Africa, where access to health services remained significantly poor. In many of them, health care systems are seriously suffering from various challenges related to adequate financial resources and infrastructure, workforce and appropriate national health policies and regulations.

Against this backdrop, the *OIC Health Report 2017* offers a comprehensive analysis of the state of health in OIC countries by looking into the latest comparable data and trends on key health indicators. The report is mainly structured around the six thematic areas of cooperation identified in the OIC Strategic Health Programme of Action (OIC-SHPA) 2014-2023, namely: Health System Strengthening; Disease Prevention and Control; Maternal, New-born and Child Health and Nutrition; Medicines, Vaccines and Medical Technologies; Emergency Health Response and Interventions; and Information, Research, Education and Advocacy. We hope that this report will contribute towards the national and regional efforts to improve the state of health in OIC countries.

Amb. Musa Kulaklıkaya
Director General
S E S R I C

EXECUTIVE SUMMARY

Health System Strengthening

Health Expenditures and Healthcare Financing

Health financing is a critical component of health systems. It is mainly related with generation, allocation and use of financial resources to provide health care services to all people at a reasonable and affordable cost. Per capita health expenditure is an important indicator of consumption of health goods and services at the micro level. In 2014, average per capita total health expenditure in OIC countries amounted to US\$ 202. This contrasts unfavorably even with the corresponding figure for the non-OIC developing countries, which was US\$ 339. As per cent of their total GDP, spending on health in OIC countries was about 4.6 per cent compared to 6.2 per cent in non-OIC developing countries and 9.9 per cent in the world. Overall, health expenditures accounted for only 8.4 per cent of all government expenditures in OIC countries, compared to 18.4 per cent in developed countries, 15.4 per cent in the world and 10.0 per cent in non-OIC developing countries.

Public financing covered 55 per cent of total health expenditures in OIC countries compared to 60 per cent in the world and 51 per cent in non-OIC developing countries. In general, the coverage of prepayment schemes, both public and private, remained very low in OIC countries whereas, 36 per cent of total health expenditures were financed through out-of-pocket payments in these countries compared to 18 per cent in the world and 34 per cent in other developing countries.

Health Workforce and Healthcare Facilities

Evidence suggests that there is a strong positive correlation between health workforce density and service coverage and health outcomes in a country/region. With only 8 physicians and 18 nurses and midwives, density of health workers in OIC countries (26 workers per 10,000 people) was recorded just above the critical threshold of 23, which is considered necessary to deliver the basic health services in a country/region. This ratio was reported at 39 for non-OIC developing countries, 48 for the world and 125 for developed countries.

On average, there were 6.7 health posts per 100,000 people in OIC countries; a level which is quite lower than the world average of 14.8 and the average of non-OIC developing countries (24.4). Similarly, the average number of health centers was reported at 2.1 per 100,000 people in OIC countries compared to 2.9 in the

world. With an average of 0.9 hospitals per 100,000 people, OIC countries are also lagging behind the world and non-OIC developing countries averages (1.3 and 1.5, respectively) in terms of availability of district, provincial and specialized hospitals. Number of hospital beds is an important indicator of resources available for inpatient care and overall access to hospital services. In 2007-2013, there were 9.5 hospitals per 100,000 people in OIC countries compared to 22.6 in non-OIC developing countries, 24.5 in the world and 66.6 in developed countries.

Disease Prevention and Control

Burden of Diseases

Prevention and control of diseases and pandemics is one of the most significant areas to be addressed in the domain of health. A look at the general trends in the cause-specific morbidity and mortality (i.e. prevalence of deaths due to communicable and non-communicable diseases, as well as injuries) reveals that in OIC countries non-communicable diseases caused 58.3 per cent of all deaths in 2015. Each year increasing number of people dies from non-communicable diseases (NCDs) in the OIC countries stemming from the positive trends seen in the risk factors (e.g. harmful use of alcohol and obesity). In OIC countries, communicable diseases were responsible for 30.2 per cent of all deaths in 2015, which was far exceeding the average of non-OIC developing countries (24.0 per cent) and the world average (22.5 per cent). As the development levels of the OIC countries go up; NCDs become a more serious problem within the OIC group in general. However, a significant number of OIC countries continue to struggle with epidemics of communicable diseases, which are preventable.

Communicable and Non-Communicable Diseases

Compared with the 1990s, HIV/AIDS cases showed an increasing trend in the OIC countries. In 2016, 1.21 per cent of all population in the OIC group were diagnosed with HIV. On average, 67.6 per cent of population with access can reach improved sanitation facilities and 84.3 per cent of population with access can use improved water sources as of 2015 in OIC countries. These figures imply that many children and adult are at risk of dying due to diarrhoea that mainly stems from unclean drinking water and unhygienic sanitation. The number of people with malaria also increased in OIC group. The total malaria cases reported in OIC countries climbed from about 3.8 million in 2008 to 45.3 million in 2015. In contrast, the number of tuberculosis cases in OIC countries followed a negative trend. The incidence of tuberculosis went down from 164.3 (per 100,000 people) in 2000 to 121.6 in 2015. An analysis on the mortalities caused by the NCDs displayed a mixed picture for OIC countries. For instance while the mortality rate caused by cardiovascular diseases was 48.1 per cent (in all deaths caused by NCDs) in 2005, the rate

decreased to 47.1 per cent (for both sexes) in 2015. Between 2005 and 2015, however, OIC countries recorded a small increase from 4.8 per cent to 5.7 per cent (both sexes) in the mortality rate caused by diabetes.

Risk Factors

An alarming message for the overall health situation and disease prevention and control for the OIC group emerged as a result of an analysis on the risk factors ranged from harmful use of alcohol to obesity. The harmful use of alcohol in OIC countries shows an increasing trend with average per capita alcohol consumption increased from 1.9 litres in 2003 to 2.1 in 2013. There exists also an upward trend in the use of tobacco in OIC countries where the average tobacco smoking rate also increased from 18.3 per cent in 2006 to 19.8 per cent in 2015. In addition, on average, the prevalence of insufficient physical activity in OIC countries was the highest (27.8 per cent) among all country groups. As a natural result of insufficient physical activity and unhealthy diet, prevalence of obesity increased from 15.2 per cent in 2010 to 17 per cent in 2014 in OIC countries. In particular, high-income OIC countries suffer more from obesity.

Maternal, New born and Child Health and Nutrition

Maternal and Child Mortality

Over the last two decades, many OIC countries have witnessed significant improvement in health care coverage and services and, consequently, they recorded declining trends in maternal, new-born and child mortality rates. According to the latest estimates, starting from a higher base rate of 559 deaths per 100,000 live births in 1990 OIC countries managed to reduce maternal mortality rate (MMR) by 42 per cent to 326 deaths per 100,000 live births in 2015. Similarly, child mortality rate has also declined from 126 deaths per 1000 live births in 1990 to 60 per 1000 live births in 2015, corresponding to a decline of 52 per cent. Nevertheless, despite this improvement, OIC group made the least progress in reducing maternal and child deaths since 1990. Maternal and child mortality has declined across the OIC regional groups but Sub-Saharan Africa and South Asia remained the most difficult places for a mother and child to survive.

Major Causes of child Mortality

The major causes of under-five mortality in OIC countries are similar to those in other developing countries. In 2015, about 40 per cent of under-five deaths were caused by three infectious diseases: pneumonia/sepsis (23 per cent), diarrhoea (9 per cent) and malaria (8 per cent). Among the pregnancy and birth related complications, prematurity (15 per cent) remained the major cause of under five deaths followed by birth asphyxia (12 per cent) and injuries (6 per cent).

Health Care Coverage

Majority of maternal, new-born and child deaths are preventable through interventions like antenatal care, skilled attendance during birth, immunization, and early care seeking for infectious diseases. The provision of quality antenatal care remained a major concern in many OIC countries. During the period 2010-2015, around 54 per cent of total pregnant women in OIC countries benefited from the recommended four antenatal checks up. The OIC average remained below the averages of the non-OIC developing countries and the world. A significant number of births in OIC countries are still taking place unassisted as only 63 per cent of deliveries were assisted by a doctor, nurse or midwife in 2010-2015 compared to 80 per cent in non-OIC developing countries and 76 per cent in the world. DTP3 vaccination has increased in OIC countries from 67 per cent in 2000 to 78 per cent in 2015. The OIC coverage remained below the world (86 per cent) and non-OIC developing countries average (88 per cent).

Nutritional Status

Latest estimates show that about 31 per cent of under-five children in OIC countries were stunted in 2010-2015 compared to 26 per cent in other developing countries and in the world. During the same period, proportion of children under five years old who were underweight was recorded at 18 per cent in OIC countries compared to 16 per cent in other developing countries. Wasting represents an acute form of under nutrition with heightened risk of disease and death for children. Wasting prevalence remained more or less the same in OIC and other developing countries with a rate of 9.3 per cent and 7.7 per cent, respectively. Though overweight was once associated mainly with high-income countries, 72 per cent of world total overweight children of 30 million were living in low-and middle-income countries in 2010-2015. OIC countries accounted for about one third of the world total overweight children with an overweight prevalence rate of 6.3 per cent compared to 3.5 per cent in other developing countries.

Feeding Practices

Proper feeding especially during the first two years of life is critical for a child's survival, growth and development. The latest estimates on feeding practices reveal that in spite of its crucial importance for the nutritional status of children, a significant number of infants and children are not breastfed. In OIC countries, only 39.3 per cent of infants were put to the breast within first hour of birth, and 32.7 per cent were exclusively breastfed during the first six months of life compared to 39.1 per cent and 33.3 per cent in the world, respectively. The coverage of breastfeeding until age 2 remained comparatively better in OIC countries with 43.6 per cent of the total children breastfed until age 2. The estimates for appropriate

feeding of children with adequate and safe complementary food reveal that 57.6 per cent of infants in OIC countries were introduced to solid, semi-solid or soft foods at 6 to 8 months.

Micronutrient Deficiencies

Micronutrient deficiencies like deficiencies of vitamin A, iron, iodine, zinc and folic acid are very common among women and children in low income developing countries, including some OIC countries. Globally, about two-third (64 per cent) of children aged 6 to 59 months received two doses of vitamin A in 2009-2013 while this ratio was recorded at 69 per cent for OIC and 61 per cent for non-OIC developing countries. During the same period, 59 per cent of households were consuming adequately iodized salt in OIC countries compared to 74 per cent in non-OIC developing countries and 69 per cent in the world. Iron deficiency anaemia also remained a major health challenge, affecting over 41 per cent of under 5 children in the world in 2016. While prevalence of anaemia was just 11 per cent for developed countries, the numbers were staggering in non-OIC developing and OIC countries with 41 per cent and 50 per cent of children suffering from anemia, respectively.

Medicines, Vaccines and Medical Technologies

Medicines and Vaccines

In 2016, OIC pharmaceutical exports valued at US\$ 0.7 billion compared to US\$ 0.6 billion in 2010, corresponding to an increase of 17 per cent. MENA remained the top OIC exporting region with a share of 65 per cent in 2016. On the other hand, OIC pharmaceutical imports have witnessed an upward trend and increased from US\$ 5.7 billion in 2010 to US\$ 6 billion in 2013 before declining to US\$ 8.1 billion in 2015. The median availability of selected generic medicines for public sector health ranged between 35 per cent and 96.7 per cent (with an overall average of 71.9 per cent). Similarly, for the private health sector, OIC countries represented a heterogeneous structure, with the median availability ranging from 57.8 per cent to 96.7 per cent (with an overall average of 77.6 per cent). Vaccines production capacity also remained very low across OIC countries. According to the latest estimates, only two OIC countries namely: Indonesia and Iran have good manufacturing capacities whereas other vaccine producers like Senegal, Uzbekistan, Bangladesh, Tunisia and Egypt are characterized by low production capacities. Indonesia remained the star performer with 10 per cent share of the global vaccine production and it is the third largest vaccine producer after China and India.

Medical Technologies

In 2013/14, 23 out of 48 OIC countries (48 per cent) have a health technology national policy. However, 25 countries (52 per cent) do not have any. In the period of 2013-2014, 28 out of 47 OIC countries with the available data did not have any national list of approved medical devices of procurement or reimbursement in the country. On the other hand, in this period, 12 out of 47 OIC countries had a national list but it was only a recommendation. Computed Tomography (CT) scan units from the public and private sectors represent the highest density of medical devices among OIC countries with 144 CT per million populations.

Emergency Risk Management for Health

Emergencies and disasters can put the continuity and sustainability of health sector services at risk, and destroy many years of health sector development. They may create severe health problems directly as a result of the hazard or through the disrupting health system, facilities and services, and limiting access to health care. Therefore, it is essential that countries develop their capacities in emergency health preparedness and response, and strengthen resilience of health systems at community level to reduce vulnerability and protect health facilities.

In this context, section 6 of the report shows that conflict-affected countries experience severe consequences in health services and outcomes. Although some OIC countries has made progress in managing disaster risks and associated health response, the capacities of countries remain extremely variable. Weak health and emergency risk management systems, continuing insecurity due to conflict and lack of access to resources and technology are among the major factors affecting the capacities. This section also provides brief information about the emergency health system framework, safe hospitals and emergency health response initiatives.

There is no country level data to assess and compare the existing capacities and needs of countries in emergency health services and a global assessment is made by WHO almost a decade ago. Many countries around the world made significant investments in their emergency preparedness and response mechanisms. Therefore, there is a need for an updated assessment of emergency health system capacities and needs at global and regional level. Previous assessment points to large discrepancies across countries in terms of emergency health management capacity.

Information, Research, Education and Advocacy

Health Education System

Health education is an important tool for health system. Data on number of health related schools and training institutions is very scarce across the globe. According to the latest available data from the WHO's World Health Report 2006, globally there were 2420 medical schools, 467 schools or departments of public health, and an indeterminate number of postsecondary nursing educational institutions in 169 countries. These schools and institutions train about one million new doctors, nurses, midwives, and public health professionals every year. As of 2006 data, four OIC countries: Iran, Turkey, Pakistan and Indonesia were ranked among the top-20 countries with the most active medical schools. On the other hand, there was only one active medical school in Guinea Bissau, Gabon and Surinam.

Quality of Health Education

Quality of health education directly affects health outcomes. Right diagnosis and an effective curing can save millions of people both in OIC countries and in other parts of the world. The discussion in this section reveals that many OIC countries, especially those situated in the Sub-Saharan Africa, suffer from insufficient number of health professionals. In addition, because of changes in the characteristics of patients and developments in technology raised concerns on the quality of health education and training of health professionals globally. OIC countries are not an exception of this fact. In this context, many OIC countries need to upgrade the quality of health education delivered at educational institutions.

Public Awareness and Health

The importance of public awareness to have healthy societies is well acknowledged. According to the WHO, majority of heart diseases, strokes, Type 2 diabetes and cancer cases could be prevented just by educating and informing people about healthy diet, physical activity/exercise and not using tobacco. Like their developing counterparts, many OIC countries are suffering from the poor level of health information and awareness. The situation is particularly critical in low income countries where many myths and taboos prevail, which lead to the low usage of health care services that are critical for the healthy survival of people.

INTRODUCTION

1

Health is a crucial factor in the well-being of humanity. It has important contributions to economic progress since healthy people live longer and are more productive. Many and diverse factors influence health status and a country's ability to provide quality health services for its people. Ministries of health play a key role for the provision of health services; however, government agencies, donor institutions, and civil society organizations also contribute to the overall functioning of the health sector.

Over the recent decades, the issue of health has gained greater importance as a major driver of socio-economic progress around the globe, with more resources than ever being invested in this sector. Looking broadly, today people are healthier, wealthier and live longer than 50 years ago. Since 1990, OIC member countries witnessed significant improvement in mother and child health with 44 per cent and 52 per cent decline in mortality rates, respectively. However, despite this remarkable progress, OIC countries as a group made the least gains in reducing maternal and child deaths since 1990. As a result, many OIC countries have missed the target of Millennium Development Goal 5 (MDG 5) of three-quarters reduction in maternal mortality and the MDG4 target of two third reductions in child mortality by the end of 2015.

People living in many OIC countries, especially in South Asia and Sub-Saharan Africa regions, are still suffering from poor health care services mainly due to the lack of adequate and sustainable financial resources, poor health infrastructure and insufficient trained health workforce. The nature and magnitude of these key challenges require a greater commitment from the governments to put health sector higher on the national development agendas and build health infrastructure and train workforce to meet the current and future demands for the health services. In this regard, the OIC Strategic Health Programme of Action (OIC-SHPA) 2014-2023, which has been prepared by SESRIC in collaboration with OIC countries and relevant international organizations, and adopted by the 4th Islamic Conference of Health Ministers, is expected to play a key role by strengthening and enhancing the cooperation and collaboration on various health issues in OIC countries.

Against this background, this report looks at the state of health in OIC countries in a comparative perspective. To set the stage, Section 2 of the report evaluates the performance of health systems in OIC countries by underlining some of the most important building blocks like health expenditures and financing, health workforce

and health infrastructure. Recent trends in prevalence of communicable and non-communicable diseases, their death burden and progress towards addressing major risk factors are being discussed and analyzed in Section 3. Section 4 discusses the current status of maternal, newborn and child health and nutrition by highlighting the current maternal and child mortality trends vis-à-vis implementation of WHO recommended interventions like antenatal checks-up, vaccination, skilled attendance of delivery, and breastfeeding etc. to curtail the MNC mortality and malnutrition. Section 5 elaborates on the status of medicines, vaccines and medical technologies production and procurement mechanisms in OIC countries along with the availability of essential medicines. Section 6 highlights the current resources and capacities for emergency health response and interventions in OIC countries along with some common gaps in the humanitarian health sector response related with information management and analysis, strategic planning and coordination and service delivery. Section 7 focuses on the linkages between level of information, education and advocacy and health outcomes in OIC countries by investigating the quality of health education and level of awareness about adverse drug reactions and irrational use of medicines. The main findings of the report are summarized in Section 8. The report concludes with policy recommendations aiming to enhance the implementation of interventions at both national and intra-OIC and international cooperation level to improve the state of health in OIC countries.

HEALTH SYSTEM STRENGTHENING

2

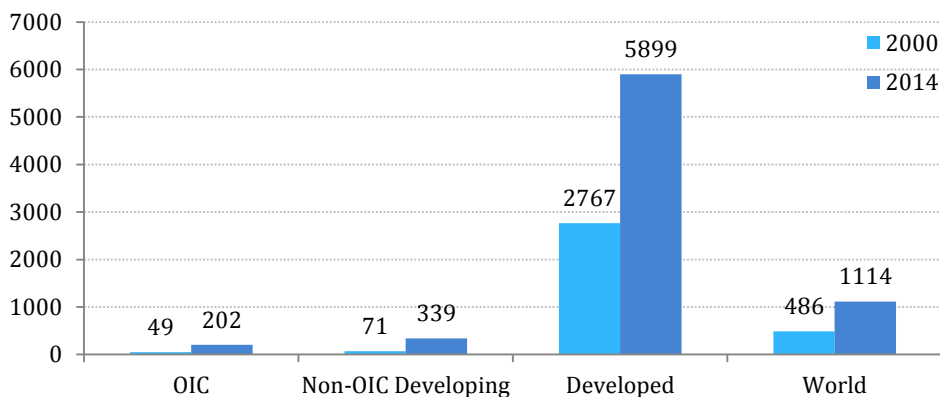
According to the definition of World Health Organization (WHO), a health system is the sum totals of all the organizations, institutions and resources which are available with the primary purpose of improving the state of health. A well-functioning health system paves the way for a healthy population, healthy society and healthy economy. In order to deliver, however, health system requires robust financing mechanism, a well-trained and adequately paid workforce, reliable information on which to base decisions and policies, well-maintained facilities and logistics to deliver quality medicines and technologies (WHO, 2014). In general, health system strengthening encompasses all those actions, activities and measures that aim to improve the situation regarding aforementioned building blocks of health system in a country/region. In the light of this understanding, this section evaluates the performance of the health systems in OIC countries in terms of health financing, workforce and infrastructure.

2.1 Health Expenditures and Financing

2.1.1 Health Expenditures Per Capita

Per capita total expenditure on health is an important indicator that indicates consumption of health goods and services at the micro level. As shown in Figure 2.1, per capita total health expenditures (in terms of current US dollars) have increased across the world between 2000 and 2014. In 2014, the per capita total health expenditure in the OIC countries amounted to US\$ 202. This contrasts unfavorably even with the corresponding figure for the Non-OIC developing countries, which was US\$ 339. Per capita expenditures on health reported by the developed countries were 29 times higher than the OIC average in 2014. However, it is worth noting that the per capita health spending in the OIC countries as a group quadrupled in 2014 from its level of US\$ 49 in 2000.

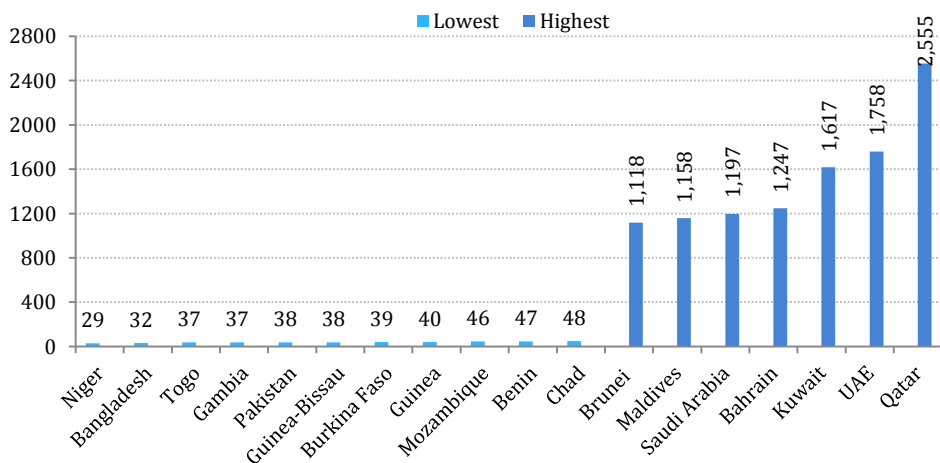
Figure 2.1: Health Expenditures per Capita (Current US\$)



Source: SESRIC staff calculations based on WHO, Data Repository

Much variation in health spending levels can be observed in OIC countries (Figure 2.2), ranging from Qatar with a total health spending per capita of US\$ 2555 to Niger with spending of only US\$ 29. In general, per capita health expenditures remained highest in OIC countries from MENA region. Among these countries, Qatar reported the highest per capita total health expenditures followed by United Arab Emirates and Kuwait. On the other hand, majority of the OIC countries in Sub-Saharan Africa region were ranked among the worst performing countries. The situation remained particularly critical in Niger, Bangladesh, Togo, Gambia, Pakistan, Guinea-Bissau and Burkina Faso, with per capita health spending less than US\$ 40. In 2014, per capita expenditure on health remained below the OIC average for 53 per cent of countries with data.

Figure 2.2: OIC Countries with Lowest/ Highest per Capita Health Expenditures, 2014



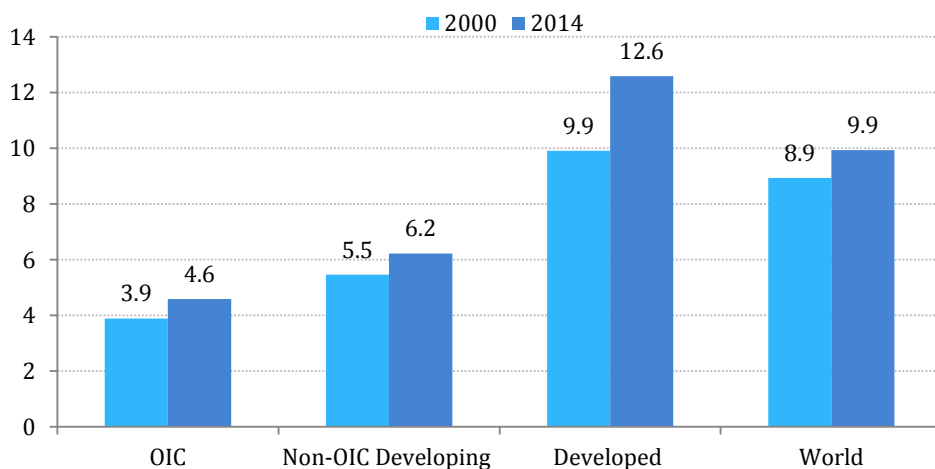
Source: WHO, Data Repository

2.1.2 Health Expenditures as Per cent of GDP

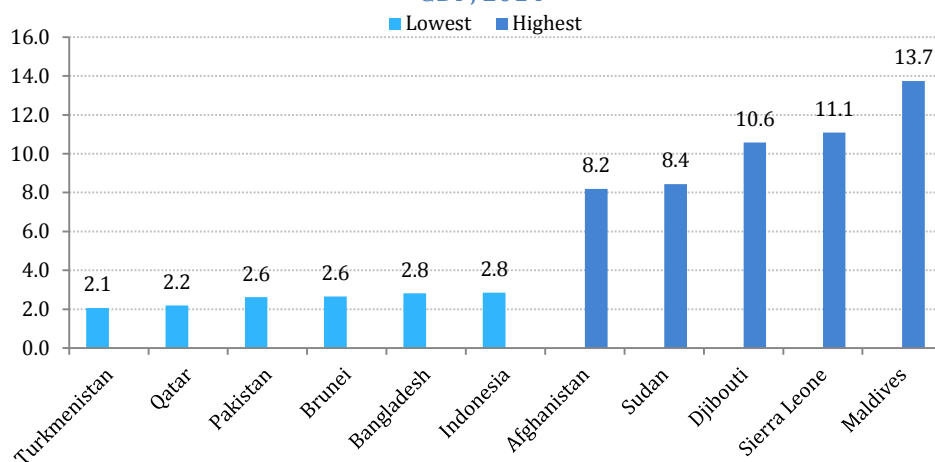
The latest estimates show that the world spent a total of US\$ 7.7 trillion on health care in 2014. The geographical distribution of financial resources for health is uneven and global health spending remained highly concentrated in developed countries which accounted for 77 per cent of it. Health spending remained a major concern in OIC countries. While accounting for nearly a quarter of the world population, OIC countries accounted only for 4.0 per cent of the global health spending. As shown in Figure 2.3, the total expenditure on health in OIC countries was about 4.6 per cent of the GDP in 2014 compared to 6.2 per cent in non-OIC developing countries. This is also far below the global and developed countries averages of 9.9 per cent and 12.6 per cent respectively. Between 2000 and 2014, the share of GDP allocated to health increased by less than one percentage points in OIC countries. During the same period, developed countries reported an increase of 2.7 percentage points (Figure 2.3).

In majority of OIC countries with data, total health expenditure accounted for more than 5 per cent of GDP. As shown in Figure 2.4, Maldives and Sierra Leone are the top health spenders with 13.7 per cent and 11.1 per cent of GDP dedicated for health respectively. All the top-5 spenders are low income countries except Djibouti and Maldives, which are lower middle-income and upper middle-income countries respectively. On the opposite side of the scale, health expenditures accounted for only 2.1 per cent of GDP in Turkmenistan followed by Qatar (2.2 per cent). Between 2000 and 2014, share of health expenditures in GDP increased in 37 OIC countries, ranging from 0.01 percentage points increase in Qatar to over 4 percentage point increase in Maldives, Sudan and Djibouti. Meanwhile, it declined between 0.1 to 4.5 percentage points in 16 OIC countries. Lebanon and Surinam reported the highest decline of over 4 percentage points followed by the Chad with a decrease of 2.7 percentage points.

Figure 2.3: Health Expenditures as per cent of GDP



Source: SESRIC staff calculations based on WHO, Data Repository

Figure 2.4: OIC Countries with Lowest/ Highest Share of Health Expenditures in GDP, 2014

Source: WHO, Data Repository

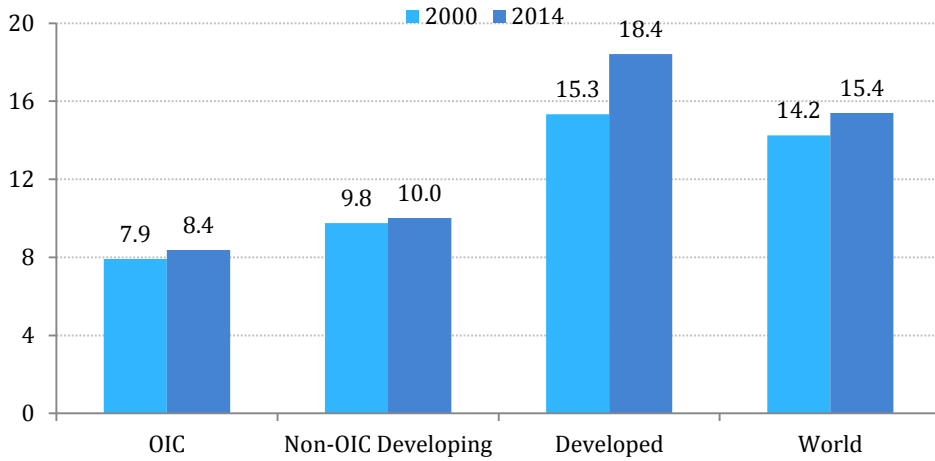
2.1.3 Government Expenditures on Health

The share of government health expenditures in its total spending is an important indicator on the relative importance of the health sector in the national development agenda and, thus, the extent of the government financial support for the health system. As depicted in Figure 2.5, government spending on health in OIC countries was only 8.4 per cent of total government expenditures in 2014, compared to 18.4 per cent in developed countries, 15.4 per cent in the world and 10.0 per cent in non-OIC developing countries. Low share of health spending in the budgets of OIC countries is not merely due to public financial constraints but is also due to low priority given to health sector. General government expenditures in these countries account for a relatively high share (30 per cent) of their GDP, indicating available fiscal space for increasing spending on health. Between 2000 and 2013, the share of total government expenditures allocated to health increased only by a half percentage points in OIC countries, while it increased by 1.2 percentage points in the world (Figure 2.5). During the same period, developed countries reported an increase of 3.1 percentage points.

At the individual country level, 18 OIC countries allocated more than 10 per cent of their national budgets for the health sector in 2014. Among these countries, Maldives, Iran, and Gambia reported the highest figures of 26.6 per cent, 17.5 per cent and 15.3 per cent, respectively (Figure 2.6). On the opposite side of the scale, six OIC countries allocated even less than 5 per cent of their total budgets for the health sector in 2014. Among these countries, Azerbaijan and Yemen reported the lowest shares (3.9 per cent) followed by Cameroon (4.3 per cent) and Pakistan (4.7

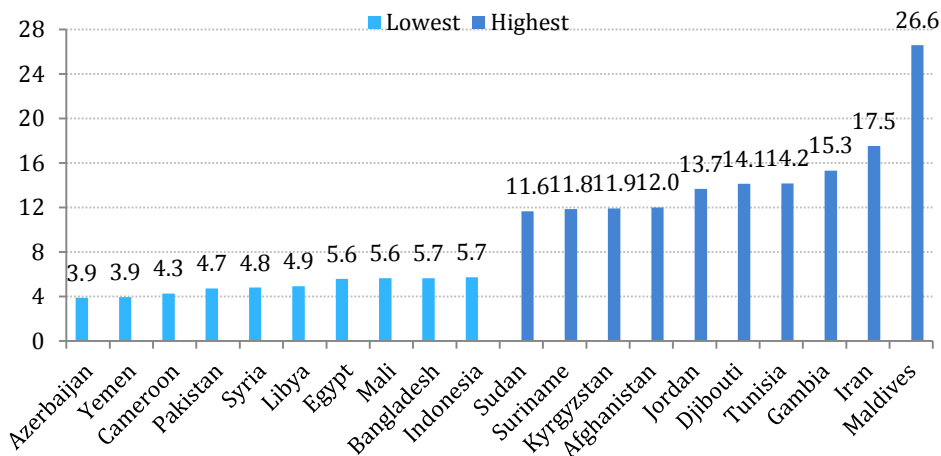
per cent). Between 2000 and 2014, share of health expenditures in government spending has increased in 31 OIC countries, ranging from 0.2 percentage points increase in Togo to 12.8 percentage points increase in Maldives. Meanwhile, it declined between 0.3 to 8.2 percentage points in 22 OIC countries, with Mozambique and Turkmenistan reporting the highest decline of 8.2 and 5.0 percentage points, respectively.

Figure 2.5: Share of Health Expenditures in Government Total Expenditures



Source: SESRIC staff calculations based on WHO, Global Health Expenditure Database

Figure 2.6: OIC Countries with Lowest/ Highest Share of Health in Budget, 2014



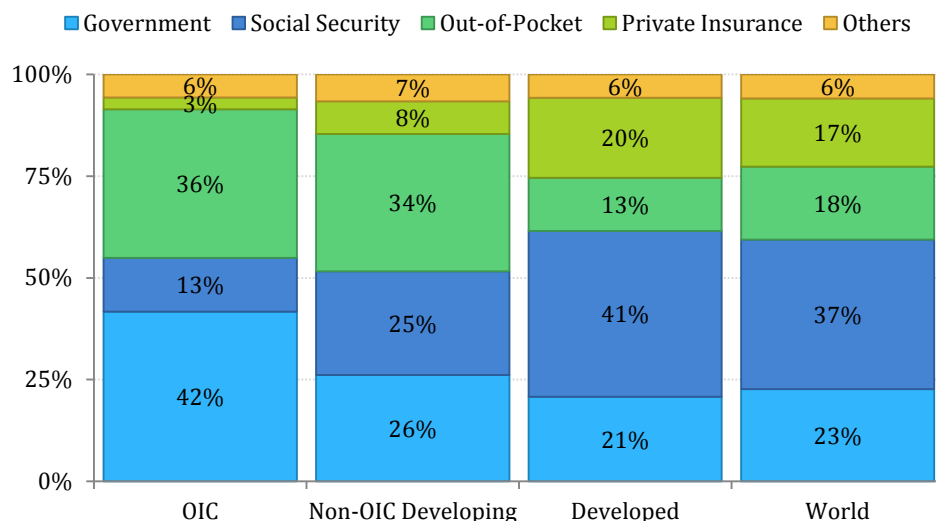
Source: WHO, Global Health Expenditure Database

2.2 Financing of Health Care

Health financing is a critical component of health systems. It is mainly related with generation, allocation and use of financial resources to provide health care services to all people at a reasonable and affordable cost. Total health expenditure comprises both the public and private sources for health care. Public financing mainly includes funds from government budget and social security schemes whereas private financing includes mainly private health insurance and out-of-pocket payments. The relative share of these sources in total health expenditures has many implications for access, equity and financial sustainability of health care services in a country. There is global evidence that to achieve the goal of universal health coverage it is necessary to generate a significant amount of financial resources for health through prepaid and pooled contributions like tax-based financing, social health insurance and private health insurance; whereas the share of direct out-of-pocket spending on health needs to be reduced (WHO, 2005).

Worldwide, public sector is the main source of health financing. However, in general, public health financing remained quite higher in advanced and high income countries compared to the developing and low income countries, respectively. As indicated in Figure 2.7, public sector accounted for 59.4 per cent of global health spending in 2014, with major contribution from social security schemes (37 per cent). A similar situation could also be observed in case of developed countries. Nevertheless, public financing covered only 55 and 52 per cent of total health expenditures in OIC and non-OIC developing countries, respectively. Social security or social health insurance is one of the most important sources of financing to achieve universal health coverage. According to the latest estimates, it is widely used in developed countries (41 per cent) and it is the major source of health care financing in these countries. The relative contribution of social security schemes in health financing remained significantly low in OIC countries. In 2014, social security based prepaid plans accounted for 13 per cent of total health expenditure and about a quarter of general government expenditure on health in OIC countries.

In fact, private sources especially the out-of-pocket spending play a significant role in the financing of health expenditures in OIC countries. In 2014, out-of-pocket expenditures accounted for approximately 82 per cent of private health expenditures and about 42 per cent of the total health spending in OIC countries. Compared to other groups' averages, the share of out-of-pocket health spending in total health expenditures remained the highest in OIC countries (Figure 2.7). This indicates the OIC countries' heavy reliance on out-of-pocket payments, which is the most regressive way of health financing and has variety of harmful consequences especially for the low income and poor households. Globally, an estimated 100 million people are pushed into poverty every year when they pay out-of-pocket for health services (WHO, 2014).

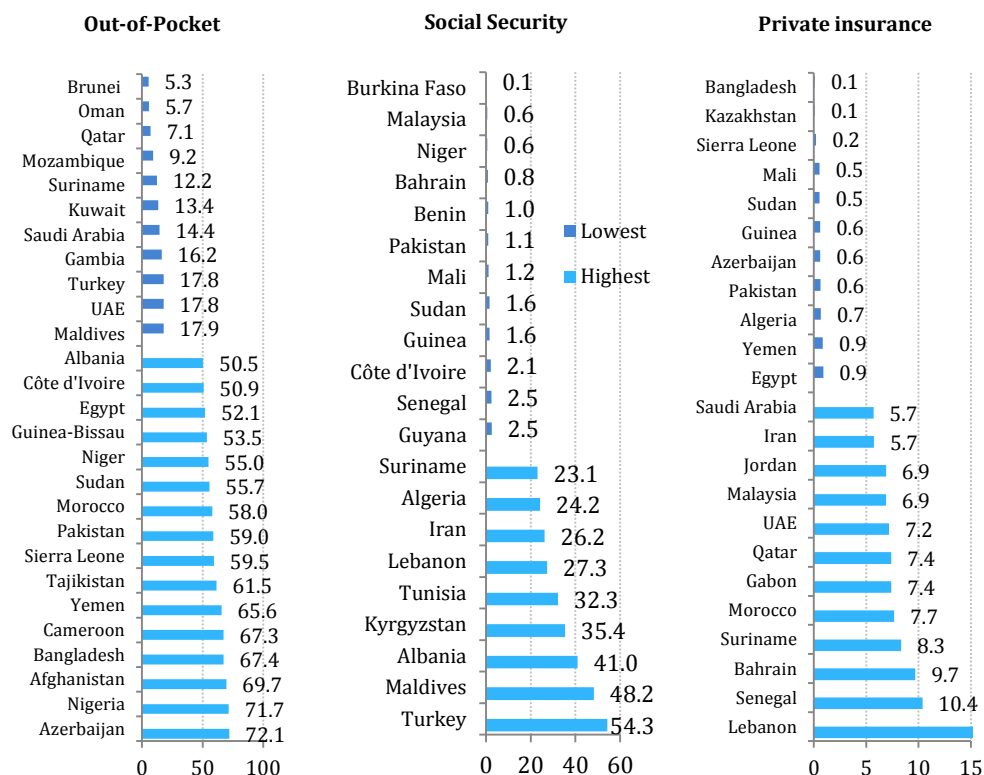
Figure 2.7: Sources of Health Finance, 2014

Source: SESRIC staff calculations based on WHO, Global Health Expenditure Database

At the individual country level, out-of-pocket payments form the major part of health financing in 16 OIC countries. Among these countries, out-of-pocket spending represents 72.1 per cent of total health expenditures in Azerbaijan, 71.7 per cent in Nigeria and 69.7 per cent in Afghanistan. On the other hand, less than 20 per cent of total health expenditures were financed through out-of-pocket payments in 11 OIC countries. Among these countries, out-of-pocket payments accounted for even less than 10 per cent of total health spending in Mozambique, Qatar, Oman and Brunei Darussalam (Figure 2.8).

In general, the coverage of prepayment schemes, both public and private, remained very low across the OIC countries. According to the latest available estimates, social security schemes accounted for less than 10 per cent of total health expenditures in 20 out of 31 countries for which the data are available in 2014. As shown in Figure 2.8, Turkey reported the highest share of social security payments in total health expenditures followed by Maldives, Albania and Kyrgyzstan. On the opposite side of the scale, these schemes accounted for even less than one per cent of total health expenditures in four OIC countries, with the lowest share (0.1 per cent) reported by Burkina Faso. Contribution of private health insurance schemes in total health expenditures also exhibits a similar trend. Among the 39 OIC countries for which the data are available, private health insurance provided less than 5 per cent of health financing in 27 countries. In Lebanon and Senegal, private health insurance spending represents 16.9 per cent and 10.4 per cent of the total health expenditures, respectively; whereas this ratio was reported at only 0.1 per cent in Bangladesh and Kazakhstan (Figure 2.8).

Figure 2.8: OIC Countries with Lowest/Highest Shares in Health Financing, 2014



Source: WHO, Global Health Expenditure Database

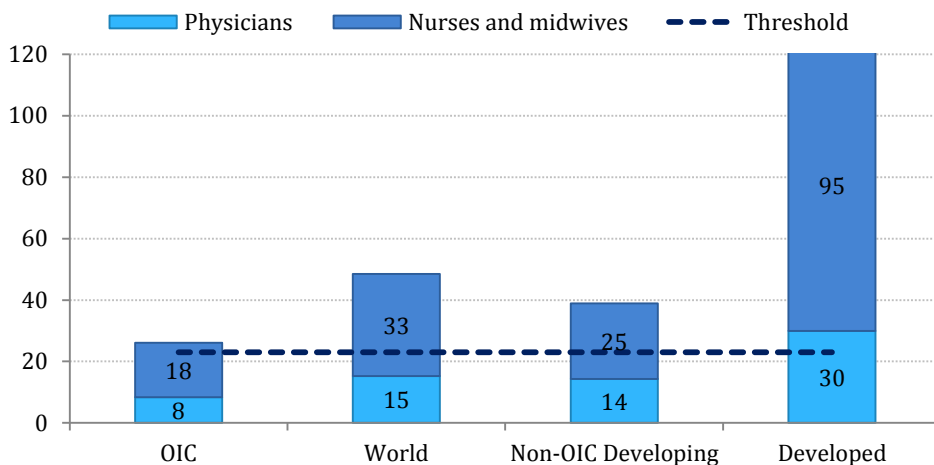
2.3 Health Workforce

Today, it is a well-recognized fact that the size, skill mix, geographical distribution and productivity of health workers play an important role in the prompt and efficient delivery of high quality health care. Health workers, particularly doctors and nurses, are the backbone of health care system. According to the latest estimates (for the latest year between 2000 and 2014), there were over 33 million physicians, nurses, and midwives in the world. The geographical distribution of these health workers remained highly skewed towards the developing countries, which accounted for more than half of the world total. With 4.1million physicians, nurses, and midwives OIC countries accounted for only 12 per cent of the world total. In line with the global trend, nurses and midwives outnumber physicians in OIC countries, with a share of 68 per cent that is similar to the world and non-OIC developing countries shares.

Overall, there is a strong positive correlation between health workforce density and health service coverage and outcomes in a country/region. Density of health

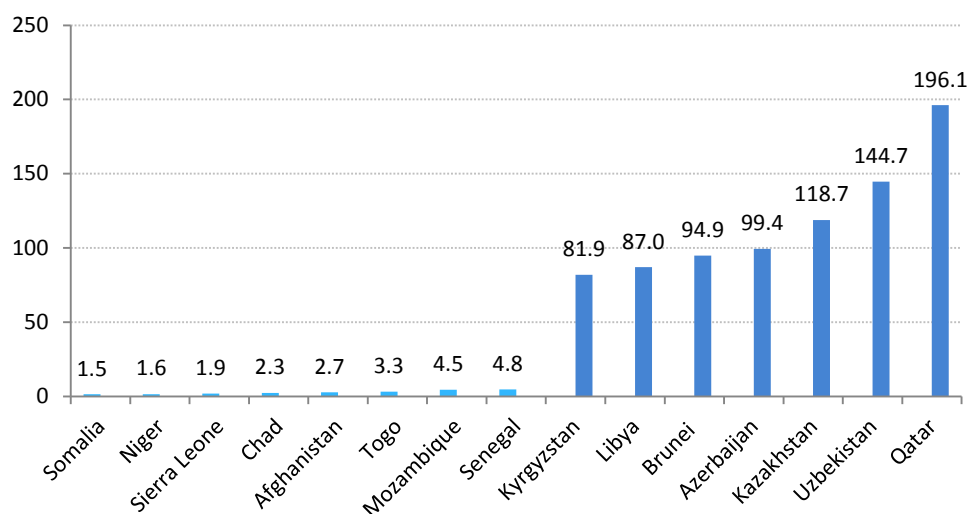
workers (physicians, nurses and midwives per 10, 000 people) varies widely across the world. As shown in Figure 2.9, there were around 15 physicians and 33 nurses per 10 000 population in the world in 2000-2014. Although developed countries accounted for only 37 per cent of the world total physicians, nurses and midwives, there were 30 physicians and 95 nurses per 10, 000 population in these countries compared to 14 physicians and 25 nurses in other developing countries. The density of both physicians and nurses and midwives remained comparatively very low in OIC countries as there were only 8 physicians and 18 nurses and midwives per 10,000 people in 2000-2014. In fact, density of health workers in OIC countries (26 per 10,000 people) was recorded just above the critical threshold of 23, which is considered necessary to deliver the basic health services in a country/region.

Figure 2.9: Health Workers per 10,000 people, 2000-2014*



*Source: SESRIC staff calculations based on WHO, Data Repository.*Most recent year available*

Many OIC countries are still facing considerable challenges with respect to quantity, diversity and competency of the health workforce. Health workforce shortages are especially serious in countries located in the South Asia and Sub-Saharan Africa regions. Among the 56 OIC countries, for which the data are available, 29 countries are facing critical shortage of health workers with less than 23 physicians, nurses and midwives per 10,000 people. Density of health workers was even less than 10 per 10,000 in 21 countries with critical shortages, 15 of them from Sub-Saharan Africa and two from South Asia. As shown in Figure 2.10, the highest number of doctors, nurses and midwives per 10,000 population was recorded in Qatar (196) followed by Uzbekistan (145) and Kazakhstan (119). On the opposite side of the scale, there were less than two health worker per 10,000 people in Somalia, Niger and Sierra Leone.

Figure 2.10: OIC Countries with Highest and Lowest Density of Health Workers

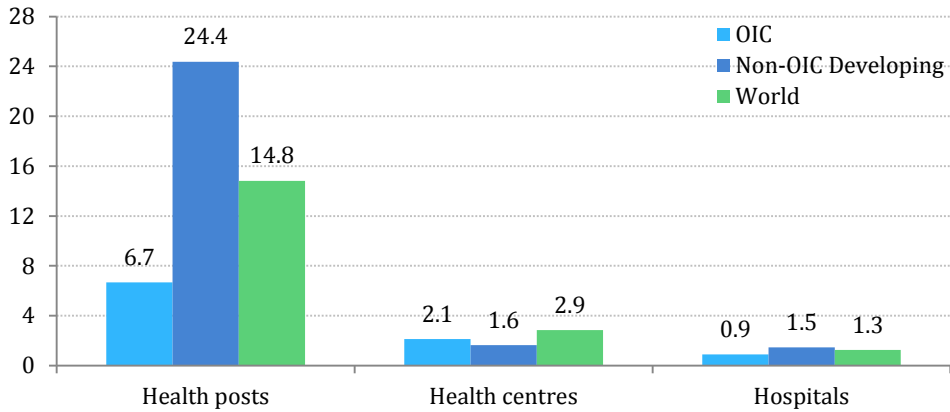
Source: WHO, Data Repository

2.4 Healthcare Facilities

Health care facilities like hospitals and health posts are critical components of an efficient and effective health care system. In majority of the developing countries, health posts constitute the first level of contact between the health system and the communities. In 2013, as shown in Figure 2.11, the average number of health posts in 34 OIC countries, for which the data are available, was 6.7 per 100,000 population; a level which is quite lower than the world average of 14.8 and the average of the non-OIC developing countries (24.4). Similarly, the average number of health centers was reported at 2.1 per 100,000 people in OIC countries compared to 2.9 in the world. With an average of 0.9 hospitals per 100,000 people, OIC countries are also lagging behind the world and non-OIC developing countries averages in terms of availability of district, provincial and specialized hospitals.

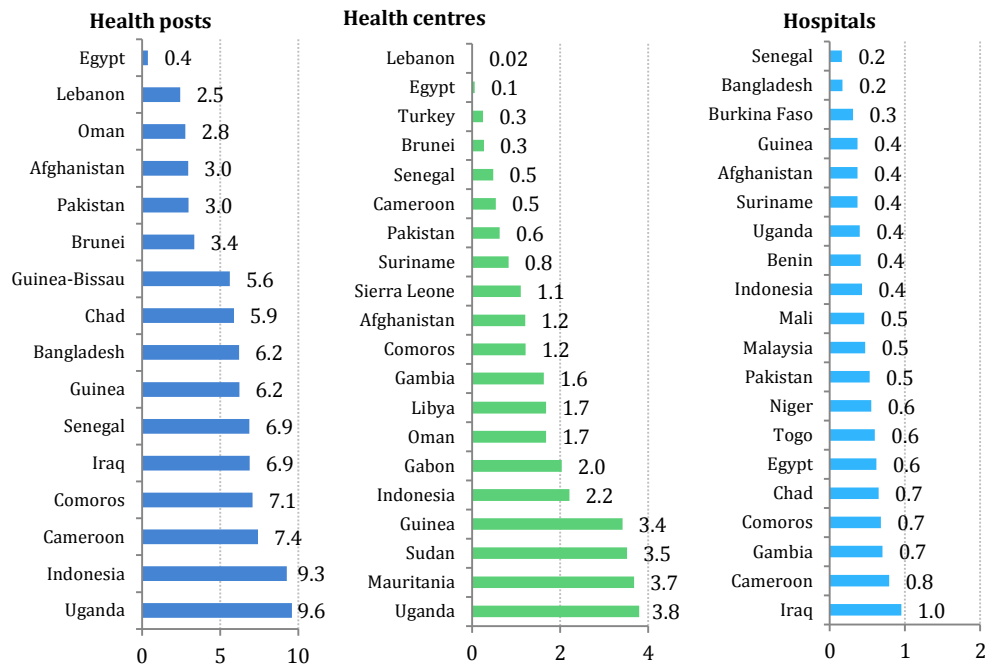
At the individual country level, 17 OIC countries reported more than 10 health posts per 100,000 people. Suriname recorded the highest density of health posts (45.3 per 100,000 population) followed by Gabon (29.4) and Libya (29.3). On the opposite side of the scale, even less than five health posts were available for 100,000 people in six OIC countries, with the lowest figure reported in Egypt (0.4) and Lebanon (2.5). Similarly, 26 OIC countries have less than 10 health centers per 100,000 people, and 29 OIC countries have less than two hospitals per 100,000 people in 2013.

Figure 2.11: Number of Health Facilities per 100,000 people, 2013



Source: SESRIC staff calculations based on WHO, Data Repository

Figure 2.12: OIC Countries with Lowest Health Facilities per 100,000 people, 2013



Source: WHO, Data Repository

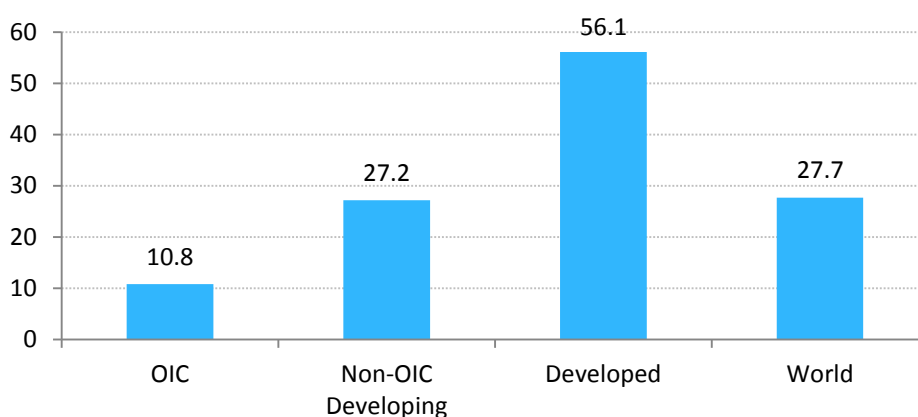
2.5 Hospital Beds

Number of hospital beds is an important indicator of resources available for inpatient care and overall access to hospital services. As shown in Figure 2.13, globally there were 27.7 beds per 10,000 people in 2000-2014 (for the latest year with data). Density of hospital beds remained quite higher in developed countries

where 56.1 hospital beds were available per 10,000 people; whereas in the group of non-OIC developing countries there were just 27.2 hospital beds available for 10,000 people. The availability of hospital beds remained comparatively very low in OIC countries, as there were only 10.5 hospital beds for 10,000 people in 2000-2014 (Figure 2.13).

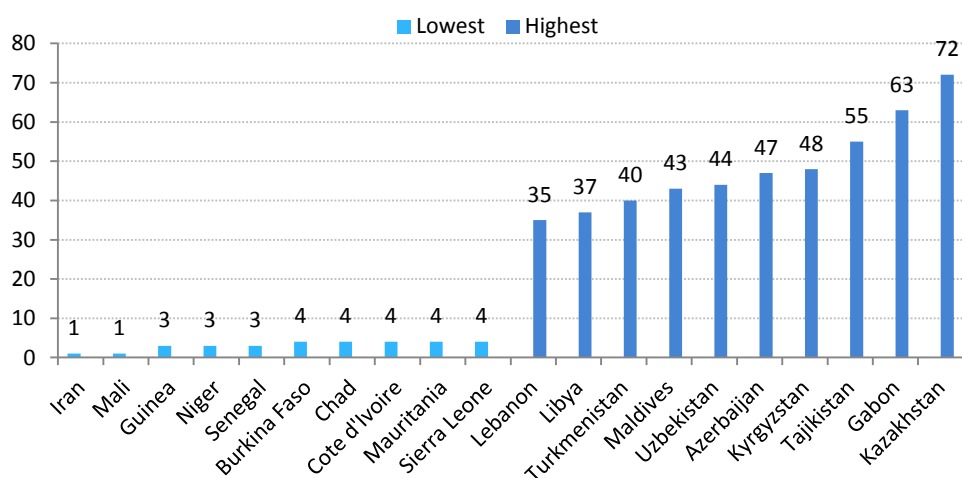
The number of hospital beds per 10,000 people varies considerably across the OIC countries. As shown in Figure 2.14, it is highest in Kazakhstan, Gabon and Tajikistan with over 50 beds per 10,000 people. Nevertheless, this ratio is even less than 10 beds per 10,000 people for 23 OIC countries. Among these countries, Iran and Mali reported the lowest density of hospital beds with only one bed available per 10,000 people in 2000-2014.

Figure 2.13: Hospital Beds per 10,000 people, 2007-2013*



*Source: SESRIC staff calculations based on WHO, Data Repository.*Most recent year available*

Figure 2.14: OIC Countries with Lowest/Highest Density of Hospital Beds



Source: WHO, Data Repository

DISEASE PREVENTION AND CONTROL

3

Prevention and control of diseases and pandemics is one of the most significant areas to be addressed in the domain of health. Cooperation in this area is a common interest of international community and all OIC countries. In this context, developing countries, including the OIC member countries have been taking various actions against diseases and pandemics through both their national health programs/strategies and their partnerships at the international level. As a substantial part of the developing countries, the group of OIC countries reflects high levels of heterogeneity and divergence in terms of socio-economic development. The existence of heterogeneity in terms of development profiles of OIC countries also seen in their performance in disease prevention and control.

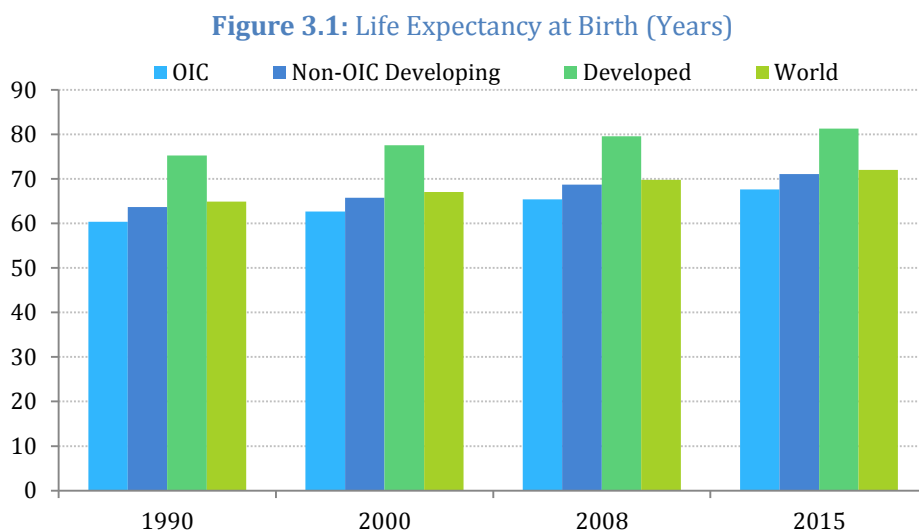
The OIC countries have been striving over the years to develop multifaceted prevention, care and treatment strategies and programs and emergency preparedness plans. However, it seems that much more efforts are still needed in many of them to strengthen health infrastructures, capacity building of health professionals and improving access to essential medicine, including vaccines, especially in those OIC countries which lack the necessary resources to do so. This underlines the pressing need for closer collaboration at the regional and global levels with the involvement of relevant international institutions and initiatives in the area of health, such as the WHO and the Global Fund.

A look at the general trends in the cause-specific morbidity and mortality (i.e. prevalence of deaths due to communicable and non-communicable diseases, as well as injuries) is quite revealing. In OIC countries 58.3 per cent of all deaths are caused by non-communicable diseases (NCDs) in 2015. Each year increasing number of people dies from NCDs in the OIC countries stemming from the positive trends seen in the risk factors (e.g. harmful use of alcohol and obesity). In OIC countries, communicable diseases (CDs) were responsible for 30.2 per cent of all deaths in 2015, which was far exceeding the average of non-OIC developing countries as well as the world average. These basic figures imply that both in terms of prevention and control of CDs and NCDs, OIC countries need to design and implement more effective strategies.

3.1 Life Expectancy at Birth

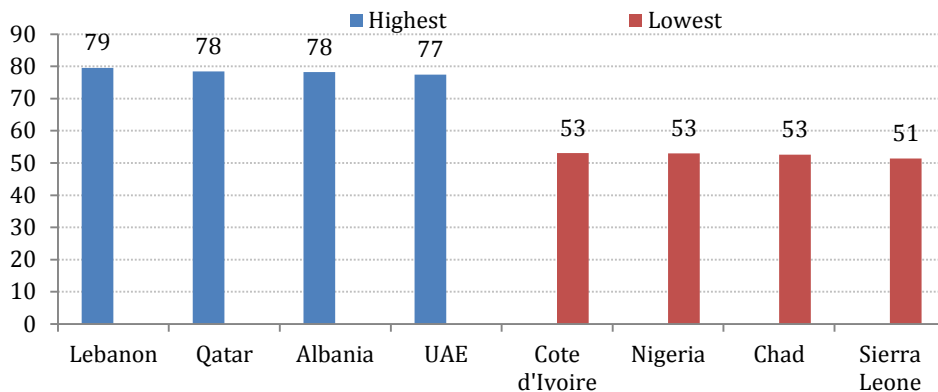
Life expectancy at birth (LEB) is an important indicator on overall health situation of the people in a country and the quality of health care services they are receiving. It is defined as the average number of years that a new born is expected to live if health and living conditions at the time of birth remained at the same levels. In general, life expectancy at birth in a country is determined by a variety of socio-economic factors like state of poverty and undernourishment, access to clean water and sanitation, availability of primary health care services and immunization coverage.

Figure 3.1 displays the life expectancy rates between 1990 and 2015 across the globe. On average, OIC countries, as a group, witnessed an improvement in life expectancy at birth between 1990 and 2015 where LEB rose from 60.3 years in 1990 to 67.6 years in 2015. In the same period, LEB increased from 63.7 to 71.1 in non-OIC developing countries. Over this period, worldwide average LEB climbed from 64.9 to 72. The average LEB in developed countries reached 81.3, which is the highest LEB among all groups. Concisely, despite major improvement in LEB, OIC countries, on average, still lag behind the average of non-OIC developing countries and the world average as well as the average of developed countries.



Source: SESRIC staff calculations based on World Bank, World Development Indicators

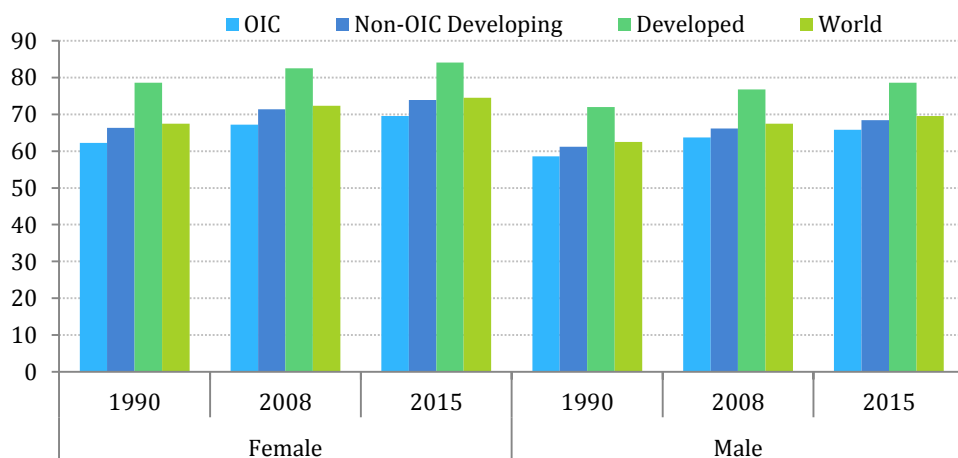
Within the OIC group, the lowest LEB was mostly seen in countries located in Sub-Saharan African region (59 years), Latin America and Caribbean (68.9 years) and South Asia (69.7 years). At the individual OIC country level, as of 2015, the highest LEB was observed in Lebanon (79.5 years). On the other side of spectrum, a person in Sierra Leone has only 51.4 years of life expectancy at birth (Figure 3.2).

Figure 3.2: OIC Countries with Highest/Lowest Life Expectancy at Birth

Source: World Development Indicators

As in other country groups, another concern for OIC countries on LEB is the existence of disparity between male and female population. As of 2015, female LEB was 69.5, which is 3.7 years higher than male LEB at birth in OIC countries. In non-OIC developing countries female LEB also exceeded male LEB by 5.5 years. The worldwide LEB for female population was 4.9 years higher compared with male population in 2015 (Figure 3.3).

Due to more efficient and effective health care systems and better living standards, many developing countries, including OIC countries, have succeeded to increase their LEB. However, developed countries continued to improve their living standards as well and therefore the gap seen in LEB between developing and developed countries did not narrow down.

Figure 3.3: Life Expectancy at Birth (Years)

Source: SESRIC staff calculations based on World Bank, World Development Indicators

Although LEB for both male and female population in OIC countries increased over time, the averages of the OIC group are still far below the average LEB seen in developed countries. It is also evident that in OIC countries, LEB did not increase equally for both male and female population. All these figures imply both the existence of problems related with disease prevention and control as well as equal access to health services for male and female population in OIC countries.

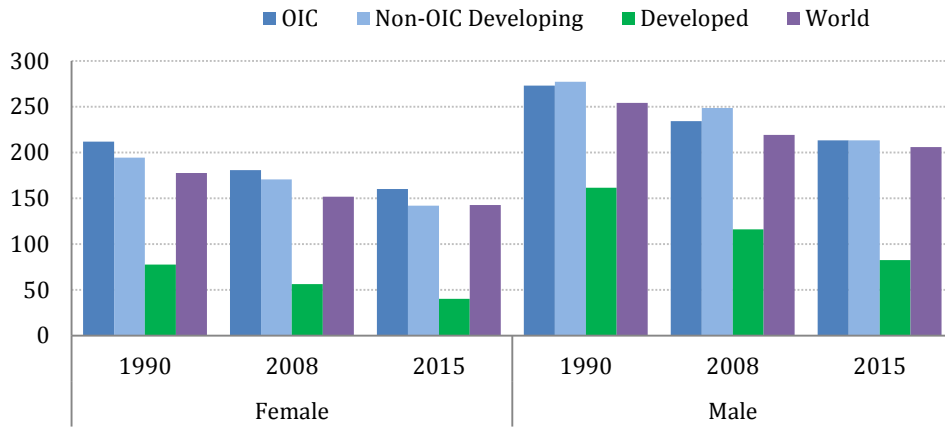
3.2 Adult Mortality Rate

Adult mortality rate (AMR) is defined as the probability of dying between the ages of 15 and 60 years per 1000 population. It is considered as one of the most common measures to assess the health situation in a country. Looking at the AMR for male and female population between 1990 and 2015 for country groups is helpful to understand the level of health progress made by these country groups.

As shown in Figure 3.4, the worldwide average AMR for male population declined from 254.2 deaths per 1000 people in 1990 to 206.1 in 2015. For female population, the world average AMR went down from 177.6 to 142.8 in the same period. In the OIC countries, it is also seen that AMR figures are on the decline. Between 1990 and 2015, AMR for males decreased from 273.2 to 213.4 where AMR for females went down from 212 to 160.2 deaths per 1000 population. The gender gap in terms of AMR reduced from 61.2 to 53.2 that is a negligible change for the OIC group. Therefore, it is difficult to claim that there was a significant improvement in reducing gender disparity in terms of AMR between 1990 and 2015 in the OIC countries. At the individual country level, Qatar recorded the lowest AMR (46.9) for female population whereas Sierra Leone had the highest AMR (392.9) in 2015. For male population, the highest AMR was recorded in Cote d'Ivoire (415.9) and the lowest AMR was observed in Qatar (65.6) (Figure 3.4). Overall, among the OIC regions, the highest AMR was recorded in the OIC countries located in Sub-Saharan Africa both for male (306.3 deaths per 1000 population on average) and female population (262.6 deaths per 1000 population on average) as of 2015.

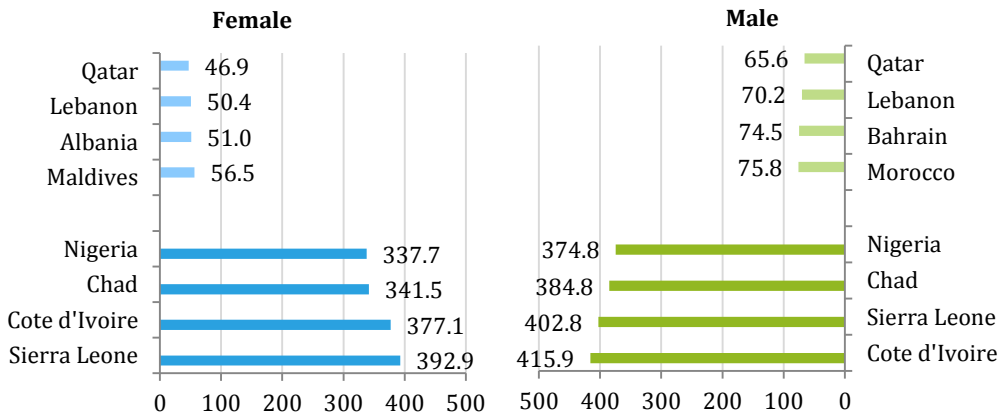
Overall, the adult mortality situation has been improved remarkably in OIC countries and their AMR exhibited a downward trend during the period 1990-2015; thanks to the extensive efforts of national and international institutions to fight against communicable and non-communicable diseases. However, the improvement was not sufficient to catch up the world averages. Therefore, OIC countries need to invest more into health services to further reduce overall AMR and to eradicate the gender disparity in AMR to create more equal societies. For the success of these efforts, it is important to cooperate with international community and benefit from other OIC countries' experiences.

Figure 3.4: Adult Mortality Rate (per 1,000 people)



Source: SESRIC staff calculations based on World Bank, World Development Indicators

Figure 3.5: OIC Countries with Highest and Lowest Adult Mortality Rate, 2015



Source: World Bank, World Development Indicators

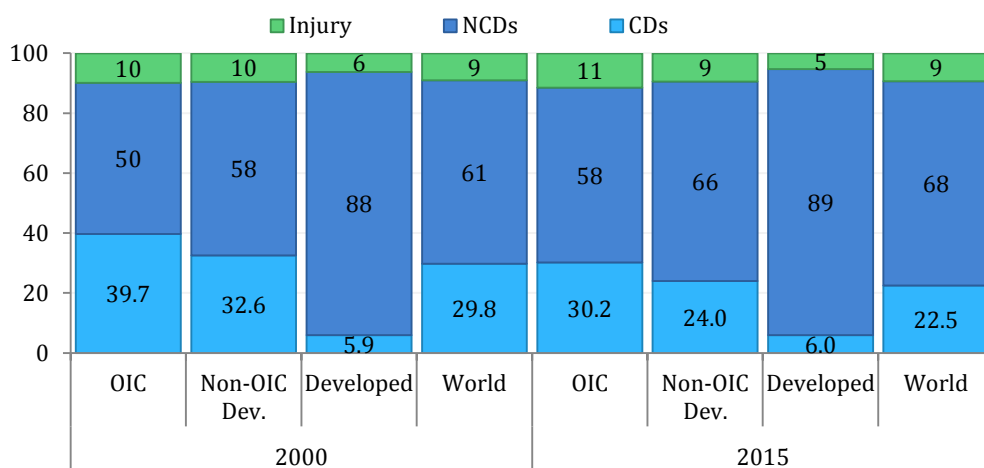
3.3 Causes of Death

According to the WHO, causes of death can be grouped under three major categories: non-communicable diseases (NCDs), communicable diseases (CDs) and injury. Development levels of countries not only affect mortality rates, life expectancy and life quality of their inhabitants but also determine their major causes of death. As countries become more developed over time, they can invest more in fighting against easily preventable CDs and therefore their inhabitants do not usually die from such diseases. However, more developed countries tend to

suffer more from NCDs that threaten their people such as diabetes, obesity and physical inactivity.

Figure 3.6 displays the causes of death across country groups in 2000 and 2015. According to the latest estimates, NCDs are the major cause of death worldwide. By 2015, 68.1 per cent of all deaths in the world can be attributed to NCDs. In the OIC group, NCDs caused 50.3 per cent of all deaths in 2000 and 58.3 per cent in 2015. The share of CDs decreased from 39.7 per cent in 2000 to 30.2 per cent in 2015; thanks to the efforts of OIC countries to cope with communicable diseases in cooperation with relevant international institutions. The share of deaths caused by injury slightly increased from 9.9 per cent in 2000 to 11.5 per cent in 2015 in OIC countries. Overall, it becomes evident that NCDs increasingly pose a challenge for the health of people living in OIC countries. While implementing policies to fight against communicable diseases, therefore, policy-makers need to pay a special attention to the rise in the prevalence of deaths caused by NCDs (Figure 3.6). In developed countries, in 2015, 88.7 per cent of all deaths were caused by NCDs compared to 66.5 per cent in non-OIC developing countries. On the other hand, in 2015, only 6.0 per cent of all deaths were caused by CDs and the major reason behind 5.3 per cent of all deaths were injuries in developed countries. However, in non-OIC developing countries CDs led many lives to come to an end that 24.0 per cent of all deaths stemmed from CDs in 2015. Compared with the average of the OIC countries (30.2 per cent), CDs were less impactful in non-OIC developing countries in terms of causing deaths. In non-OIC developing countries, injuries were responsible for 9.5 per cent of all deaths in 2015.

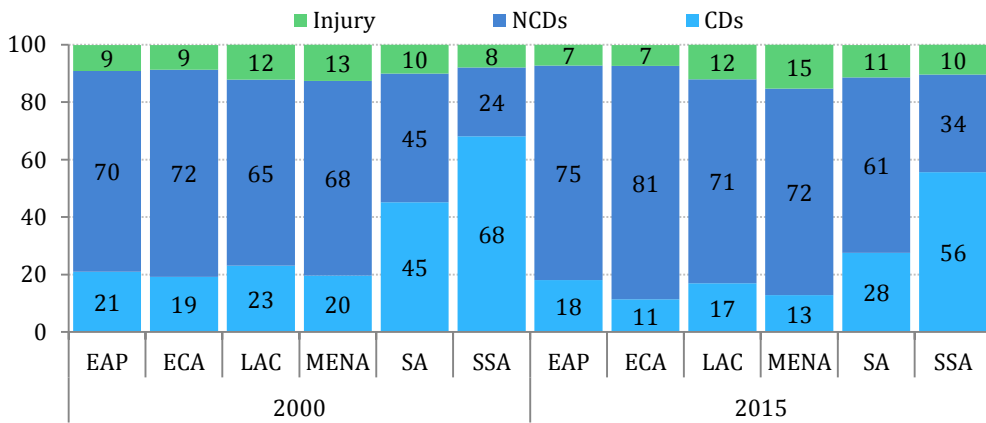
Figure 3.6: Causes of Death (per cent of Total Deaths)



Source: SESRIC staff calculations based on World Bank, World Development Indicators

At the OIC regional group level, Sub-Saharan Africa (SSA) suffers the most from CDs and maternal, prenatal and nutrition conditions where 55.7 per cent of all deaths were caused by these diseases in 2015. Compared with 2000, SSA countries managed to reduce this rate from 68.1 per cent to 55.7 per cent, which is a positive development. South Asia region has the second highest average among OIC sub-regions in terms of deaths caused by CDs where 27.6 per cent people die from these diseases as of 2015 (Figure 3.7). At the individual country level, 68.4 per cent of all deaths in Somalia were caused by CDs. This makes Somalia the number one country in the OIC group in terms of having the highest percentage of deaths caused by CDs. On the other hand, Europe and Central Asia (ECA) region pays the highest bill in terms of deaths caused by NCDs where, on average, 81.3 per cent of all deaths were caused by these diseases (Figure 3.7). ECA is followed by East Asia Pacific (EAP) region where 74.6 per cent of all people die from NCDs. About 92.4 per cent of all deaths in Albania were caused by NCDs, which is the highest share among OIC countries. Injuries cost lives of people the most in the MENA and LAC regions where 15.3 per cent and 12.0 per cent of all deaths were caused by injuries in 2015, respectively (Figure 3.7).

Figure 3.7: Causes of Death in OIC Regions (per cent of Total Deaths)



Source: SESRIC staff calculations based on World Bank, World Development Indicators

3.4 Communicable Diseases

Infectious diseases are caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi; the diseases can be spread, directly or indirectly, from one person to another. These type of diseases usually called as communicable and most of the time these diseases are preventable. This section looks at the prevalence of CDs in OIC countries.

3.4.1 HIV/AIDS

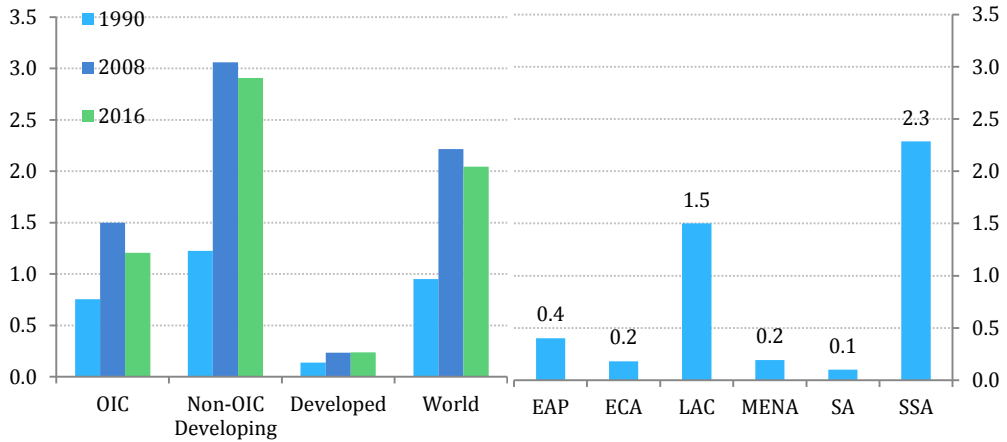
The Human Immunodeficiency Virus (HIV) targets the immune system and weakens people's surveillance and defence systems against infections and some types of cancer. As the virus destroys and impairs the function of immune cells, infected individuals gradually become immunodeficient. The most advanced stage of HIV infection is Acquired Immunodeficiency Syndrome (AIDS), which can take from 2 to 15 years to develop depending on the individual. AIDS is defined by the development of certain cancers, infections, or other severe clinical manifestations.

Since the beginning of the epidemic, almost 78 million people have been infected with the HIV virus and about 39 million people have died of HIV. Sub-Saharan Africa remained most severely affected region, with nearly 1 in every 20 adults living with HIV and accounting for nearly 71 per cent of the people living with HIV worldwide. HIV can be transmitted via the exchange of a variety of body fluids from infected individuals, such as blood, breast milk, semen and vaginal secretions. In order to diagnose, an HIV test is required that reveals infection status by detecting the presence or absence of antibodies to HIV in the blood.

According to Figure 3.8 (left), the prevalence of HIV across country groups between 1990 and 2008 increased. Thanks to the international and national campaigns, a worldwide decrease was observed in the prevalence of HIV cases during this period. By 2016, the worldwide average prevalence rate was measured as 2.05 per cent. In developed countries, this rate was only calculated as 0.24 per cent in the same year. The highest rate was observed in non-OIC developing countries with an average rate of 2.90 per cent. OIC countries, on average, suffer less from HIV compared with non-OIC developing countries and the world average. Only 1.21 per cent of all population in the OIC group were diagnosed with HIV in 2016. In OIC countries, the total number of deaths caused by AIDS went down from 463,400 in 2008 to 413,400 in 2015 (Figure 3.8, left).

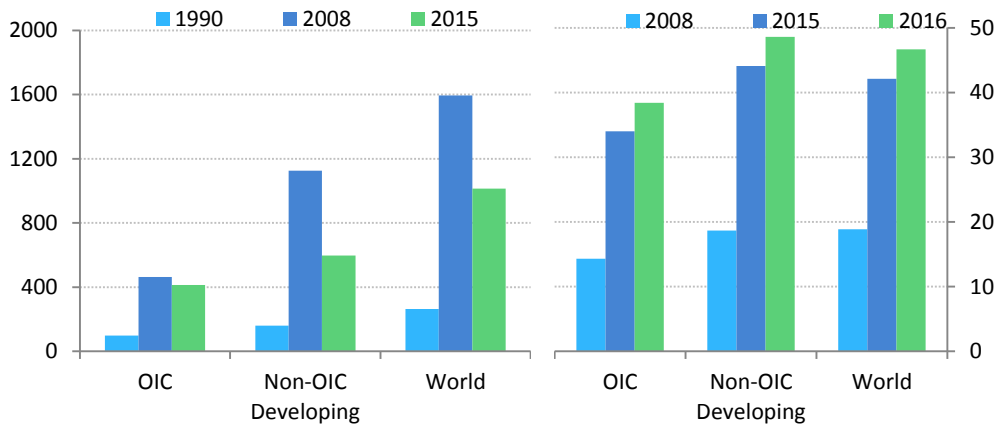
Across OIC regions, SSA suffers the most from HIV where the average prevalence rate was measured at 2.3 per cent in 2016; a rate which exceeded the world average of 2.05 per cent. Among the OIC sub-regions, the lowest HIV cases were recorded in SA where only 0.1 per cent of all population were diagnosed with HIV (Figure 3.8, right). The antiretroviral therapy coverage is being one of the most effective ways of AIDS prevention and treatment therapy. According to the WHO, antiretroviral drugs allow people with HIV to live for many years before developing symptoms of AIDS. The antiretroviral therapy coverage rate in the OIC group, on average, was on the rise that increased from 14.3 per cent in 2008 to 38.4 per cent in 2016. However, this average still lagged behind the world average of 46.7 per cent in 2016 (Figure 3.9, right).

Figure 3.8: Prevalence of HIV (per cent of population ages 15-49)



Source: SESRIC staff calculations based on World Bank, Health Nutrition and Population Statistics

Figure 3.9: AIDS related Deaths (000) and Antiretroviral Therapy Coverage (right)



Source: SESRIC staff calculations based on World Bank, Health Nutrition and Population Statistics

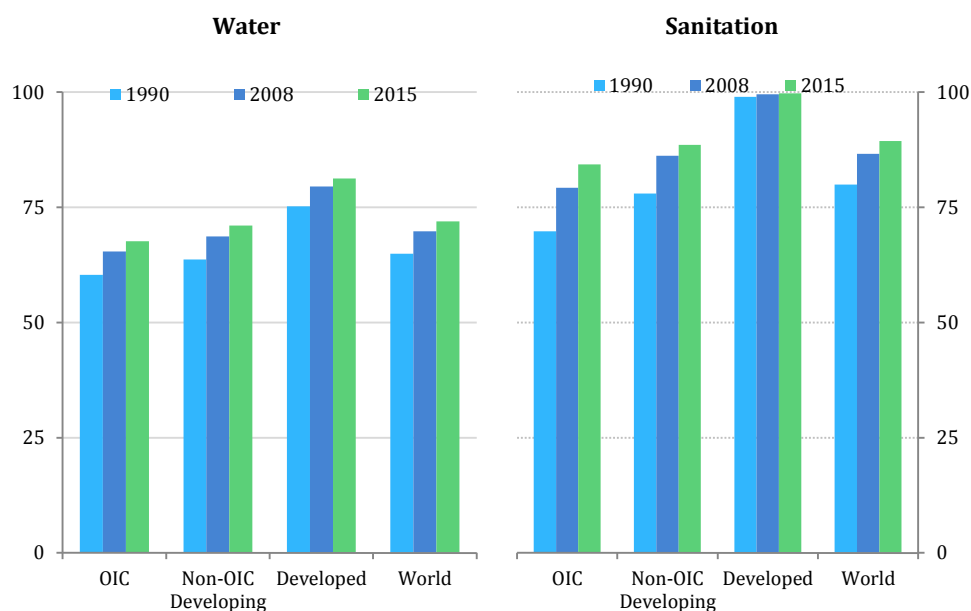
3.4.2 Diarrhoea

Diarrhoea is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). It is the second leading cause of death in children under five years old worldwide. Each year diarrhoea kills around 525,000 children under five. Globally, there are nearly 1.7 billion cases of diarrheal disease every year. Diarrhoea is also a leading cause of malnutrition in children under five years old.

A significant proportion of diarrhoea can be prevented through safe drinking-water and adequate sanitation and hygiene. OIC countries, on average increased their sanitation facilities and water sources compared with the 1990s. As of 2015,

on average, 67.6 per cent of population in the OIC countries have access to improved sanitation facilities and 84.3 per cent of population have access to improved water sources (Figure 3.10). In both indicators, the OIC group, on average, lagged behind the averages of other country groups. These figures indicate that access to sanitation and water sources are still a key problem in a number of OIC countries, particularly in Sub-Saharan Africa and South Asia regions. These two factors are the main causes for diarrhoea cases seen and are responsible for many deaths. Therefore, OIC countries need to invest more into infrastructure to reduce number of deaths caused by diarrhoea that is a preventable communicable disease.

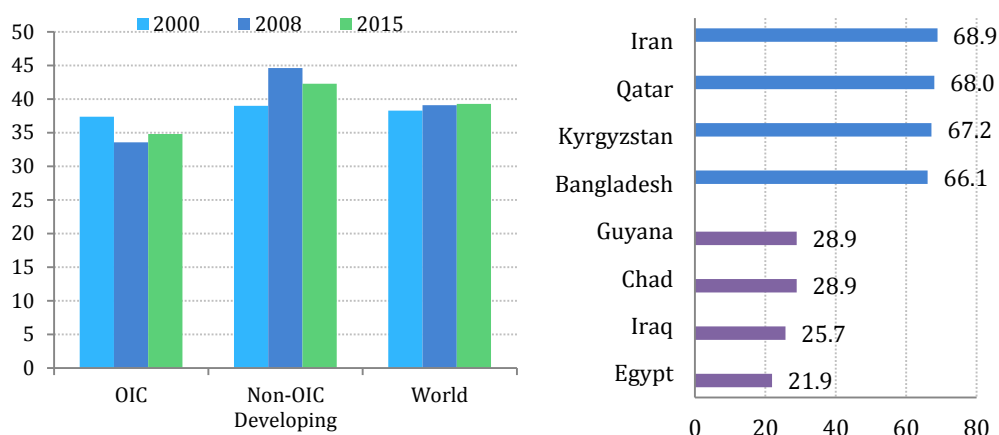
Figure 3.10 : Access to Improved Sanitation and Water Sources, per cent of population



Source: SESRIC staff calculations based on World Bank, Development Indicators and WHO/UNICEF Joint Monitoring Programme

In diarrhoea treatment oral rehydration and continued feeding are very effective. According to Figure 3.11, OIC countries' average performance has been on the rise in the coverage of this treatment method. As of 2015, 34.8 per cent of children under 5 were receiving oral rehydration and continued feeding in the OIC group where the world average was 39.3 per cent. Iran was the best performer country in this category among OIC countries where 68.9 per cent of all children could access oral rehydration and continued feeding. On the other side, in Egypt only 21.9 per cent of all children could get this treatment as of 2015.

Figure 3.11: Diarrhea Treatment and Best and Worst Performing OIC Countries in 2015* (right)



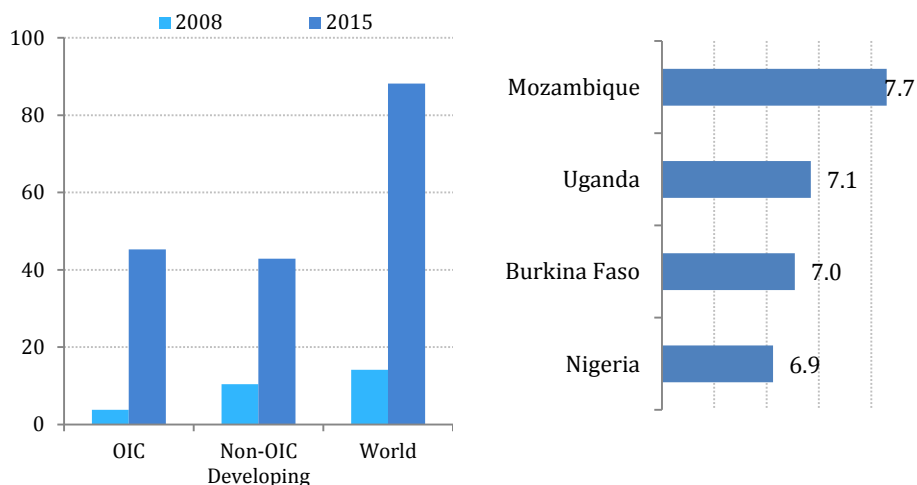
Source: SESRIC staff calculations based on World Bank, Health Nutrition and Population Statistics Note: * Most recent year available

3.4.3 Malaria

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected mosquitoes. In 2013, malaria caused an estimated 584,000 deaths mostly among African children. Malaria is a preventable and curable disease. Increased malaria prevention and control measures are dramatically reducing the malaria burden in several developing countries. Nevertheless, the total malaria cases reported in the OIC group climbed from about 3.8 million in 2008 to 45.3 million in 2015 (Figure 3.12, left). The worldwide reported malaria cases exceeded 88 million as of 2015. Mozambique was the leading country in terms of total reported malaria cases among OIC member countries with 7.7 million cases in 2015 (Figure 3.12, right).

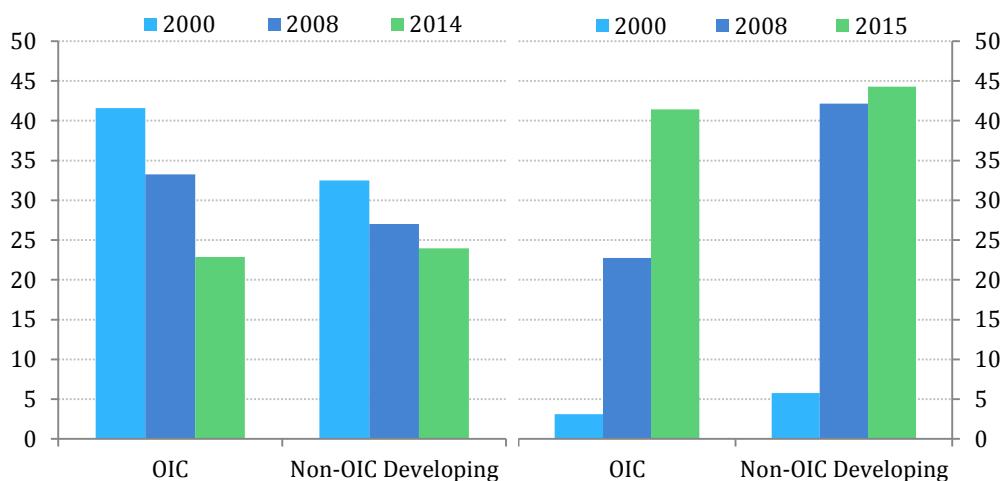
The focus areas involved in combating malaria include public health information, science and research, prevention and control, case management, and regulating diagnostic tests and vaccines. In particular, antimalarial drugs and the use of insecticide-treated bed nets are very effective to combat with malaria among children. In the OIC group, 22.9 per cent of children with fever receiving antimalarial drugs where the average of non-OIC developing countries was 24.0 per cent in 2014 (Figure 3.13, left). In the OIC group, 41.4 per cent of children could sleep under insecticide-treated bed nets where the average of non-OIC developing countries was 44.3 per cent in 2014 (Figure 3.13, right). These figures imply that OIC countries need to show further efforts to fight with malaria. Both MDGs and SDGs referred to malaria and set targets for countries to fight with malaria across the globe. The OIC-SHPA 2014-2023 also presents a roadmap for OIC countries for the combat against malaria under the Thematic Area 2.

Figure 3.12: Malaria Cases Reported (millions, left) and OIC Countries with Highest Malaria Cases Reported in 2015 (millions, right)



Source: SESRIC staff calculations based on World Bank and WHO

Figure 3.13: Share of Under 5 Children with Fever Receiving Antimalarial Drugs and Use of ITNs (right)



Source: SESRIC staff calculations based on World Bank and WHO

3.4.4 Pneumonia

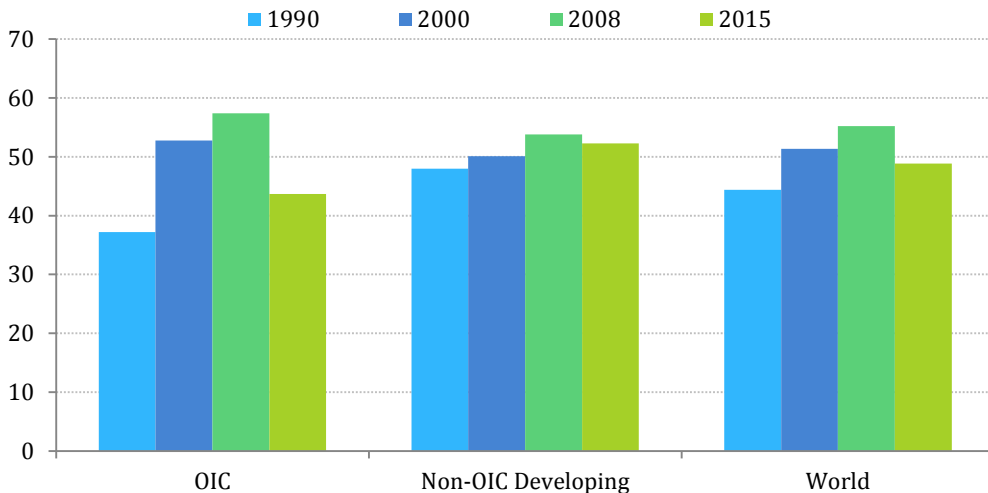
Pneumonia is a form of acute respiratory infection that affects the lungs. The lungs are made up of small sacs called alveoli, which fill with air when a healthy person breathes. When an individual has pneumonia, the alveoli are filled with pus and fluid, which makes breathing painful and limits oxygen intake.

Pneumonia is the single largest infectious cause of death in children worldwide and killed an estimated 920,136 children under the age of five in 2015, accounting for 16 per cent of all deaths of children under 5 years old. Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa.

Pneumonia can be prevented by immunization, adequate nutrition and by addressing environmental factors. Children can be protected from pneumonia; it can be prevented with simple interventions, and treated with low-cost, low-tech medication and care.

Acute Respiratory Infection (ARI) treatment is used to combat with pneumonia. It helps to improve breathing quality and over time eradicates pneumonia. According to Figure 3.14, compared with 1990s, there is a significant improvement in Acute Respiratory Infection (ARI) treatment rate in the OIC group where the average went up from 37.2 per cent in 1990 to 43.7 per cent in 2015. A similar positive trend observed in non-OIC developing countries where their average ARI treatment rate reached 52.3 per cent by 2015. To this end, OIC countries need to intensify their efforts to increase ARI treatment coverage rate especially OIC countries located in Sub-Saharan Africa who suffer a lot from pneumonia and related breathing problems.

Figure 3.14: Acute Respiratory Infection (ARI) Treatment (per cent of children under 5 taken to a health provider)



Source: SESRIC staff calculations based on World Bank, World Development Indicators

3.4.5 Tuberculosis

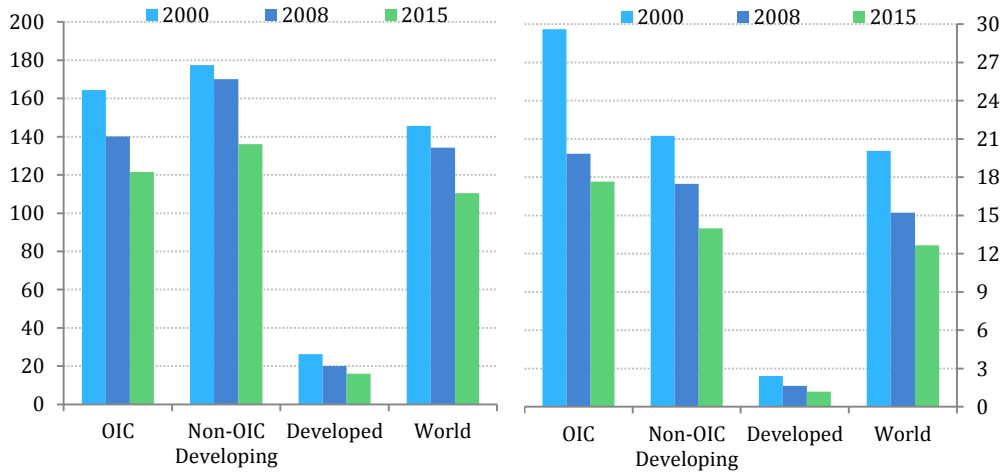
Tuberculosis (TB) is an infectious bacterial disease caused by mycobacterium tuberculosis, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats.

Tuberculosis (TB) is second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent. In 2015, there were an estimated 10.4 million new (incident) TB cases worldwide, of which 5.9 million were men, 3.5 million were women and 1 million were children. People living in six countries accounted for 60 per cent of the new cases (India, Indonesia, China, Nigeria, Pakistan and South Africa) where three of them are OIC member countries. Over 95 per cent of TB deaths occur in low- and middle-income countries.

Tuberculosis is treatable with a six-month course of antibiotics. It was one of the specific communicable diseases mentioned in MDGs (MDG 6). The estimated number of people falling ill with TB each year is declining, although very slowly.

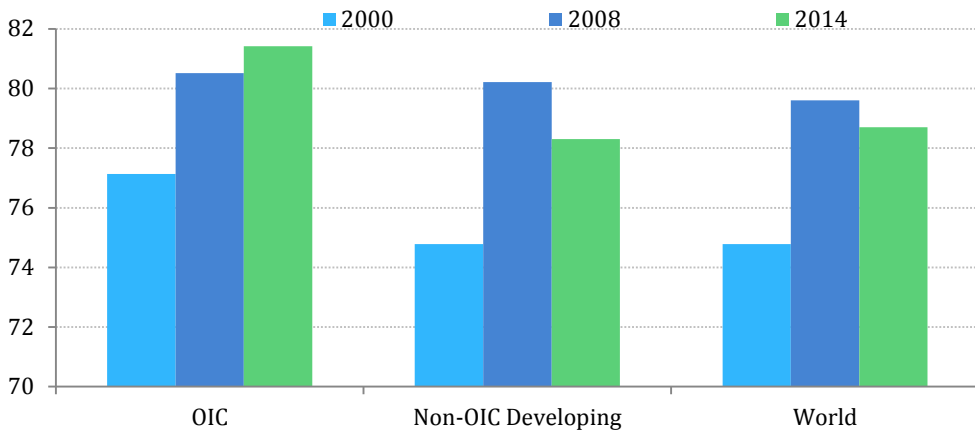
The worldwide incidence of tuberculosis and deaths from tuberculosis were declining as shown in Figure 3.15. OIC countries also follow a similar negative trend where the incidence of tuberculosis went down from 164.3 (per 100,000 people) in 2000 to 121.6 in 2015 (Figure 3.15, left). The global average regressed to 110.4 (per 100,000 people) in 2015. Death rate (stemming from tuberculosis) also decreased from 29.6 in 2000 to 17.6 in 2015 for the OIC group where the world average was recorded at 12.6 as of 2015. In non-OIC developing countries, on average, about 14.0 (per 100,000 people) inhabitants died from TB in 2015 (Figure 3.15, right). This implies that the OIC group still suffers more from TB compared with the world average and the average of non-OIC developing countries. Apart from prevention efforts, the high success rate in tuberculosis treatment was one of the reasons behind the reduction in death tolls stemming from TB. As of 2014, the average success rate was measured as 81.4 per cent in the OIC group and as 78.3 per cent for the non-OIC developing countries group (Figure 3.16). In this regard, the OIC group does not seem to have a major problem about the success rate of treatment of TB but about the coverage rate. Therefore, OIC member countries need to intensify their efforts in combating with TB by increasing the coverage rate of the TB treatment.

Figure 3.15: Incidence of Tuberculosis (per 100,000 people, left) and Tuberculosis Death Rate (per 100,000 people, right)



Source: SESRIC staff calculations based on World Bank and WHO

Figure 3.16: Tuberculosis Treatment Success Rate (per cent of new cases)



Source: SESRIC staff calculations based on World Bank and WHO

3.4.6 Polio

Polio is a highly infectious disease caused by a virus. It invades the nervous system, and can cause total paralysis in a matter of hours. The virus is transmitted by person-to-person spread mainly through the faecal-oral route or, less frequently, by a common vehicle (e.g. contaminated water or food) and multiplies in the intestine. Initial symptoms are fever, fatigue, headache, vomiting, and stiffness in the neck and pain in the limbs. One in 200 infections leads to irreversible paralysis

(usually in the legs). Polio mainly affects children under 5 years of age. There is no cure for polio, it can only be prevented. Two vaccines promise the possibility of eradication. Polio cases have decreased by over 99 per cent since 1988, from an estimated 350,000 cases then, to 37 reported cases in 2016. As a result of the global effort to eradicate the disease, more than 16 million people have been saved from paralysis. The reduction is the result of the global effort to eradicate the disease. According to the WHO estimates, the eradication of polio would save at least US\$ 40–50 billion between 1988 and 2035, mostly in low-income countries including several OIC countries.

3.5 Non-Communicable Diseases

Chronic NCDs are the number one cause of death and disability in the world. The term NCDs refers to a group of conditions that are not mainly caused by an acute infection, result in long-term health consequences and often create a need for long-term treatment and care. These conditions include cancers, cardiovascular disease, diabetes and chronic lung illnesses among the major ones. Many NCDs can be prevented by reducing common risk factors such as tobacco use, alcohol use, physical inactivity and eating unhealthy diets.

According to the WHO, Non-communicable Diseases (NCDs) kill 40 million people each year, equivalent to 70 per cent of all deaths globally. Cardiovascular diseases account for most NCD deaths, or 17.7 million people annually, followed by cancers (8.8 million), respiratory diseases (3.9 million), and diabetes (1.6 million). These four groups of diseases account for over 80 per cent of all deaths caused by NCDs.

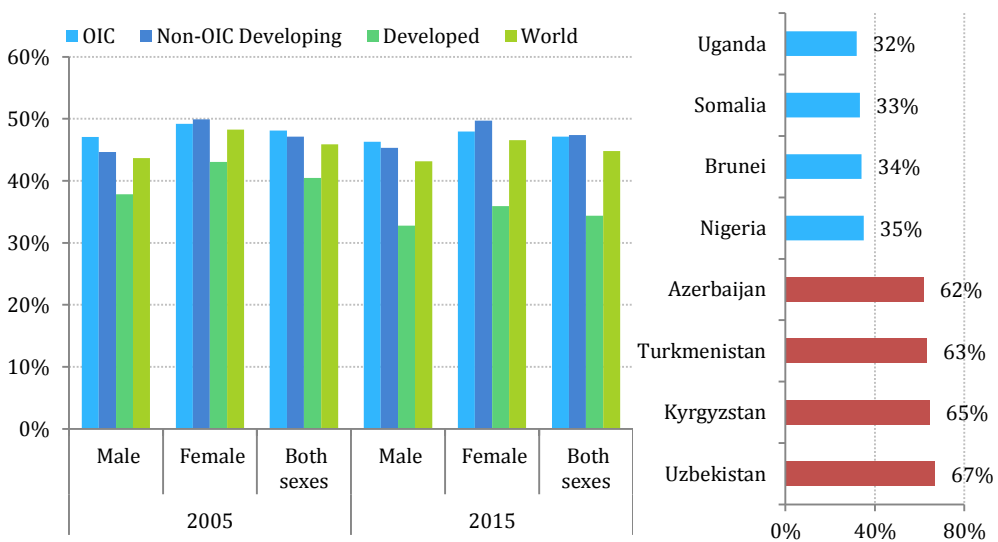
NCDs have significant socio-economic consequences. Millions of dollars are being allocated for the treatment of cardiovascular disease, cancer, diabetes and chronic respiratory disease, which undermine the sustainability of national health care budgets. According to the WHO estimates, almost 100 million people are pushed into poverty every year because they have to pay from their pockets for health services. This indicates that there is a strong correlation between NCDs and poverty. In developing countries many poor people fall into a dangerous vicious cycle where poverty and NCDs continually reinforce each other. The capacity of poor families to fight with NCDs goes down as they are more pushed into poverty and are left with less money for basic needs. In this context, policies to combat NCDs need to include three components: treatment of diseases, reduction of risk factors that lead to NCDs (i.e. prevention), and addressing socio-economic impacts of NCDs on people. The United Nations and other international organisations pay a special attention to NCDs that affect millions of people all across the world. Sustainable development Goals (SDGs) specified a target to reduce by one third premature mortality from non-communicable diseases through prevention and treatment by 2030.

3.5.1 Cardiovascular diseases

Cardiovascular diseases are caused by disorders of the heart and blood vessels, and include coronary heart disease (heart attacks), cerebrovascular disease (stroke), raised blood pressure (hypertension), peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure. The major causes of cardiovascular diseases are tobacco use, physical inactivity, an unhealthy diet and use of alcohol. The genetic and environmental factors have some effects on cardiovascular diseases as well.

Cardiovascular diseases (CVDs) are the number one cause of death globally. In other words, more people die annually from CVDs than from any other cause. According to the WHO, an estimated 17.7 million people died from CVDs in 2015, representing 31 per cent of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke. According to Figure 3.17, mortality rate stemming from CVDs (in all deaths caused by NCDs) went down between 2005 and 2015 worldwide. In OIC countries while the mortality rate was 48.1 per cent in 2005, the rate decreased to 47.1 per cent (for both sexes) in 2015. Non-OIC developing countries saw a slight increase in the average mortality rate that went up from 47.1 per cent to 47.4 per cent (for both sexes) in the same period. Among all country groups, the non-OIC countries and OIC countries had the highest mortality rates (both sexes) in 2015.

Figure 3.17: Mortality Caused by Cardiovascular Diseases and OIC Countries with Highest/Lowest Mortality Rate, 2015



Source: SESRIC staff calculations based on WHO Data Repository

Figure 3.17 (left) also indicates that female population suffer more from CVDs compared with male population in all country groups. Therefore, policies that address cardiovascular diseases should take this fact into account. By 2015, mortality rate among men caused by CVDs measured at 46.3 per cent whereas this rate was only 48.0 per cent for women in the OIC group. In developed countries this rate was 35.9 per cent for women and 32.3 per cent for men, showing the existence of a gap between country groups in terms of treatment and prevalence.

Among OIC countries, the lowest mortality rate by cardiovascular diseases was seen in Uganda (31.9 per cent) and Somalia (33.3 per cent) in 2015. In Uzbekistan, this rate exceeded 66 per cent, which was the highest average mortality rate seen in the OIC group stemming from CVDs (Figure 3.17, right).

Most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet, obesity, physical inactivity, and harmful use of alcohol. In this regard, OIC countries need to intensify their efforts to fight with risk factors (e.g. obesity, physical inactivity etc.) that lead to cardiovascular diseases as well as to improve and scale-up specific treatment methods used on cardiovascular diseases.

3.5.2 Cancer

According to the WHO, cancer is a generic term for a large group of diseases that can affect any part of the body. Other terms used are malignant tumours and neoplasms. One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs, the latter process is referred to as metastasizing. Metastases are the major cause of death from cancer.

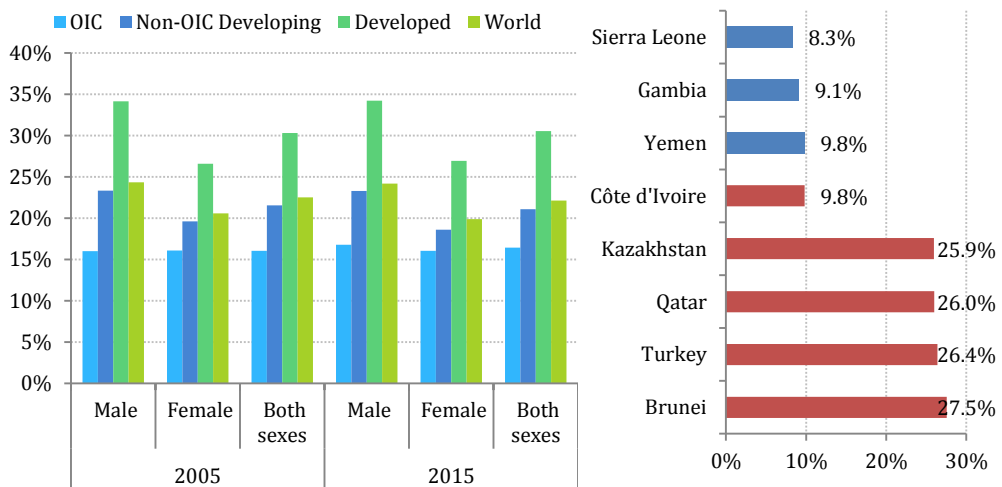
Cancers are among the leading causes of morbidity and mortality worldwide, 8.8 million cancer related deaths reported in 2015. Globally, nearly 1 in 6 deaths is due to cancer. The most common causes of cancer death are cancers of lung (1.59 million deaths), liver (745,000 deaths) and stomach (723,000 deaths). Estimates show that the number of new cases is expected to rise by about 70 per cent over the next two decades. Among men, the 5 most common sites of cancer diagnosed were lung, prostate, colorectum, stomach, and liver cancer. Among women the five most common sites diagnosed were breast, colorectum, lung, cervix, and stomach cancer.

According to Figure 3.18 (left), the worldwide mortality rate by cancer (malignant neoplasms) increased between 2005 and 2015. In OIC countries, it went up from 16.0 per cent in 2005 to 16.4 per cent in 2015 for both sexes. In non-OIC developing countries, the average mortality rate went down from 21.6 per cent to

21.1 per cent for both sexes. The world average was recorded at 22.1 per cent (for both sexes) in 2015. Developed countries, as a group, had the highest mortality rate led by cancer (30.6 per cent) in 2015. These figures reveal that OIC countries, on average, were performing better compared to non-OIC developing countries and the world in 2015. Figure 3.18 (left) further displays that male population suffers more from cancer compared to female population in all country groups. OIC countries are not an exception of this fact. By 2015, the mortality rate caused by cancer was measured at 16.8 per cent among men, whereas this rate was calculated at 16.1 per cent for women in the OIC group.

Among OIC countries, the lowest mortality rate by cancer was seen in Sierra Leone (8.3 per cent) and Gambia (9.1 per cent) in 2015. Brunei had the highest rate (27.5 per cent) among data available OIC countries in the same year (Figure 3.18, right).

Figure 3.18: Mortalities Caused by Cancer and OIC Countries with Highest /Lowest Mortality Rate, 2015



Source: SESRIC staff calculations based on WHO, Data Repository

Every cancer type requires a specific treatment regimen which encompasses one or more modalities such as surgery, and/or radiotherapy, and/or chemotherapy. In this regard, early detection and correct diagnosis are essential for adequate and effective treatment. Around one third of cancer deaths are due to five leading behavioural and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. Tobacco use is the most important risk factor for cancer causing around 20 per cent of global cancer deaths and around 70 per cent of global lung cancer deaths. Therefore, fighting

with these risk factors carries a critical importance for all countries in order to reduce deaths caused by cancer.

3.5.3 Chronic Respiratory (Lung) Diseases

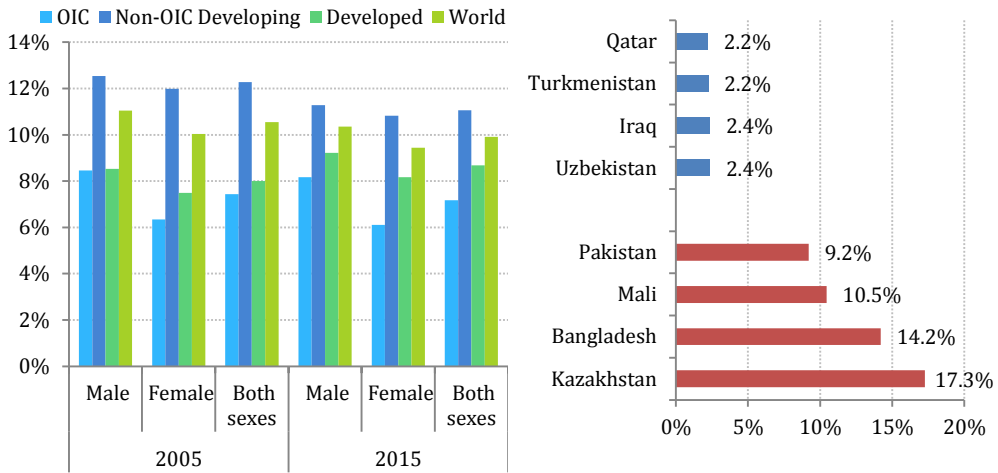
Chronic respiratory diseases are diseases of the airways and other structures of the lung. Some of the most common diseases include asthma, chronic obstructive pulmonary disease (COPD) and respiratory allergies. Hundreds of millions of people suffer every day from chronic respiratory diseases. According to the latest WHO estimates, about 235 million people suffered from asthma in 2013. More than 3 million people died of COPD in 2015, which is equal to 5 per cent of all deaths globally that year.

According to Figure 3.19, worldwide mortality rate by respiratory diseases went down between 2005 and 2015. The world average dropped from 10.4 per cent in 2005 to 9.9 per cent in 2015 (for both sexes). In OIC countries, the average mortality rate decreased from 8.2 per cent to 7.2 per cent (for both sexes) in the same period. In non-OIC developing countries the average mortality rate also went down from 12.3 per cent to 11.1 per cent in this period (for both sexes). According to Figure 3.19 (left), in OIC countries male population suffers more from respiratory diseases compared with female population mainly stemming from widespread use of tobacco among men. By 2015, the mortality rate caused by respiratory diseases among men was measured as 8.2 per cent whereas this rate was calculated as 6.1 per cent for women in the OIC group.

Among OIC countries, the lowest mortality rate by respiratory diseases was seen in Qatar (2.2 per cent) and followed by Turkmenistan (2.2 per cent) in 2015. Kazakhstan had the highest mortality rate (17.3 per cent) in the same year stemming from respiratory diseases within the OIC group (Figure 3.19, right).

According to the WHO, main risk factors for respiratory diseases consist of tobacco smoking, indoor air pollution, outdoor pollution, allergens, and occupational risks and vulnerability. While investing into treatment of respiratory diseases, OIC countries should not neglect to implement policies to reduce abovementioned risk factors that cause millions of death each year. In this regard, “Tobacco Free OIC” initiative of the Statistical Economic and Social Research and Training Centre for Islamic Countries (SESRIC) can play an important role to reduce mortalities caused by respiratory diseases across OIC countries.

Figure 3.19: Mortalities Caused by Respiratory Diseases and OIC Countries with Highest and Lowest Mortality Rate (right), 2015



Source: SESRIC staff calculations based on WHO, Data Repository

3.5.4 Diabetes

Diabetes is a chronic NCD that occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin, it produces. Hyperglycaemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels. The causes of diabetes are complex. However, the global increase in the prevalence of diabetes can be attributed to rapid increases in overweight, including obesity and physical inactivity.

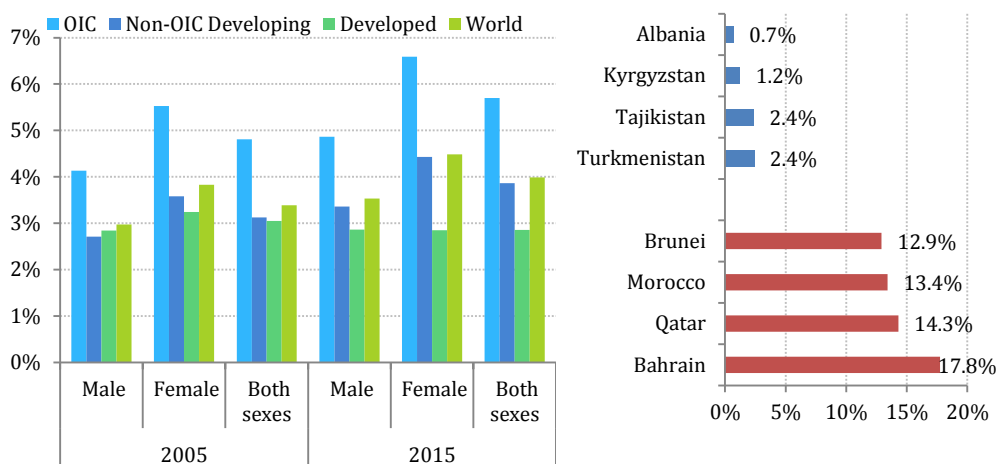
According to Figure 3.20, the worldwide mortality rate caused by diabetes increased from 3.4 per cent in 2005 to 4.0 per cent in 2015 (for both sexes). During this period, OIC countries also witnessed an increase from 4.8 per cent to 5.7 per cent (both sexes). In non-OIC developing countries the average mortality rate went up from 3.4 per cent to 3.9 per cent over this period (both sexes). Developed countries, on average, were affected the least from diabetes among country groups analysed both in 2005 and 2015. According to Figure 3.20 (left), in OIC countries female population suffers more from diabetes compared with male population. By 2015, mortality rate caused by diabetes measured as 4.9 per cent among men, whereas this rate was calculated as 6.6 per cent for women in the OIC group.

Among OIC countries, the lowest mortality rate caused by diabetes was seen in Albania (0.7 per cent) and Kyrgyzstan (1.2 per cent) in 2015 whereby Bahrain had the highest mortality rate (17.8 per cent) stemming from diabetes within the OIC

group (Figure 3.20, right). Bahrain was followed by Qatar with a mortality rate of 14.3 per cent.

Overall, OIC countries should stop the positive trend seen in mortalities caused by diabetes. This requires organisation of public awareness campaigns on diabetes and promotion of healthy life styles at social circles. In terms of treatment methods, which are usually costly, policy-makers in the OIC group need to allocate more sources to combat against diabetes.

Figure 3.20: Mortalities Caused by Diabetes and OIC Countries with Highest/Lowest Mortality Rate, 2015



Source: SESRIC staff calculations based on WHO, Data Repository

3.6 Risk Factors

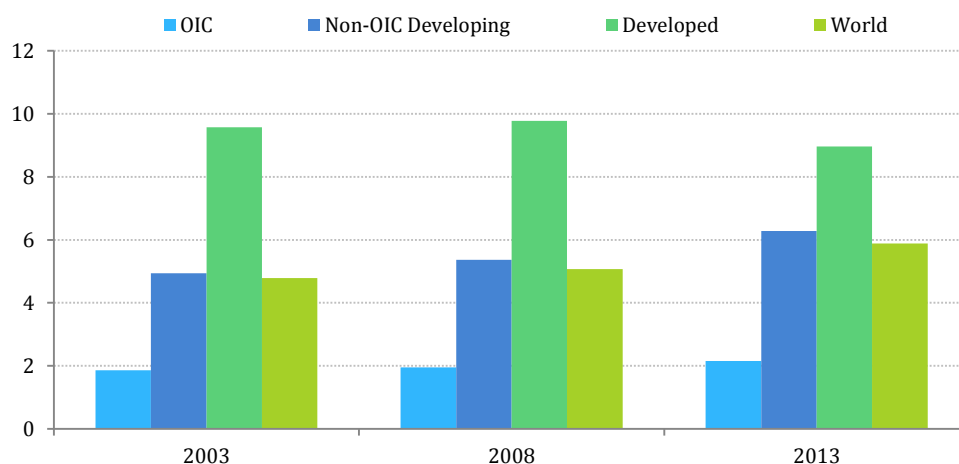
Risk factors can be described as the factors that lead to NCDs all across the world spanning from harmful use of alcohol to physical inactivity. This sub-section overviews the stance of OIC countries in the selected major risk factors compared with other groups and draws some policy-recommendations for the way forward.

3.6.1 Use of Alcohol

Use of alcohol is a causal factor in more than 200 diseases including infectious diseases such as tuberculosis as well as the course of HIV/AIDS and injury conditions. It is therefore a risk factor for several diseases that impacts millions of people all across the world. Globally, 3.3 million deaths every year result from harmful use of alcohol; this represents 5.9 per cent of all deaths, according to the WHO estimates. In particular, in the age group 20-39 years approximately 25 per cent of the total deaths are alcohol-attributable.

Beyond health consequences, use of alcohol brings significant social and economic losses to individuals and society. In this context, governments all across the world need to fight with the harmful use of alcohol. Figure 3.21 shows that the world average in recorded alcohol per capita consumption increased from 4.8 litres in 2003 to 5.9 litres in 2013. The OIC group, on average, also witnessed an increase from 1.9 litres to 2.1 litres in the same period whereas developed countries recorded a decrease from 9.6 litres to 9.0 litres.

Figure 4.2: Per Capita (15+) Alcohol Consumption (liters of pure alcohol)



Source: SESRIC staff calculations based on WHO, Data Repository

These figures imply that OIC countries are at a greater risk compared with 2003 in terms of harmful use of alcohol. Therefore, OIC countries need to develop and implement effective strategies to cope with the positive trend seen in the use of alcohol. Some of the worldwide used strategies in this regard include:

- regulating the marketing of alcoholic beverages (particular to younger people);
- regulating and restricting availability of alcohol;
- enacting appropriate drink-driving policies;
- reducing demand through taxation and pricing mechanisms;
- raising awareness of public health problems caused by harmful use of alcohol and ensuring support for effective alcohol policies;
- providing accessible and affordable treatment for people with alcohol-use disorders; and
- implementing screening and brief interventions programmes for hazardous and harmful drinking in health services.

In addition to abovementioned global strategies, OIC countries with the help of Islamic scholars can convey the unique message of Islam to the society that Islam prohibits the use of alcohol. If the message is delivered widely and effectively to

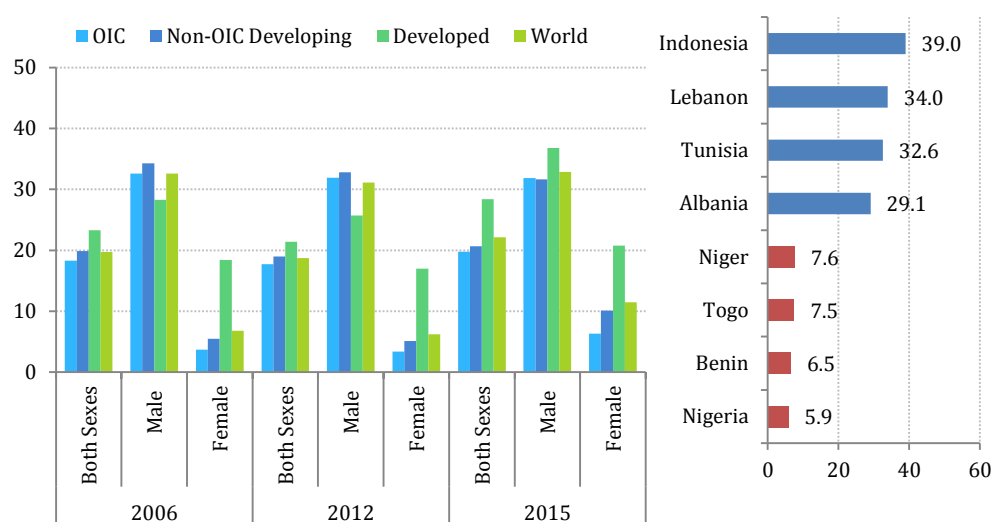
the society, this strategy can help many Muslims all across OIC countries to stop alcohol intake.

3.6.2 Tobacco Use

The WHO declares that tobacco kills up to half of its users. There are more than 4000 chemicals in tobacco smoke, of which at least 250 are known to be harmful and more than 50 are known to cause cancer. It is estimated that tobacco kills around 6 million people each year. More than 5 million of those deaths are the result of direct tobacco use while more than 600,000 are the result of non-smokers being exposed to second-hand smoke. Developing countries in general suffer the most from tobacco use. Nearly 80 per cent of the world's 1 billion smokers live in low- and middle-income countries. Tobacco users who die prematurely deprive their families of income, raise the cost of health care and hinder economic development.

As Figure 3.22 displays, despite exerting global efforts to reduce tobacco use, the prevalence of smoking did not go down. On the contrary, it went up from 19.7 per cent in 2006 to 22.1 per cent in 2015 worldwide. In OIC countries, the average tobacco smoking rate also increased from 18.3 per cent to 19.8 per cent in the same period (for both sexes). As in other country groups, male population is more exposed to smoking in the OIC countries with an average of 31.9 per cent in 2015. In the OIC group, on average, only 6.3 per cent of all women were smoking in 2015. At the individual OIC country level, as shown in Figure 3.22 right, Indonesia had the highest smoking prevalence rate (39.0 per cent) followed by Lebanon (34.0 per cent) and Tunisia (32.6 per cent) in 2015 (for both sexes).

Figure 3.22: Age-standardized Prevalence of Tobacco Smoking (15+), 2015



Source: SESRIC staff calculations based on Institute for Health Metrics and Evaluation (IHME)

Some effective ways to cope with tobacco use are including raising tax on tobacco products, banning advertisements for tobacco products, restricting areas to smoke in general. The WHO Framework Convention on Tobacco Control entered into force in February 2005. Since then, it has become one of the most widely embraced treaties in the history of the United Nations with 180 states, covering 90 per cent of the world's population. In 2008, the WHO introduced a practical, cost-effective way to scale up implementation of provisions of the WHO Framework Convention on the ground called MPOWER. The six MPOWER measures include:

- Monitor tobacco use and prevention policies;
- Protect people from tobacco use;
- Offer help to quit tobacco use;
- Warn about the dangers of tobacco;
- Enforce bans on tobacco advertising, promotion and sponsorship; and
- Raise taxes on tobacco.

The response of the OIC to tobacco use was also very effective and comprehensive. The process started in 2007 with an initiative developed by the Statistical Economic and Social Research and Training Centre for Islamic Countries (SESRIC) in response to the spread of tobacco epidemic in the OIC countries that is called "Tobacco Free OIC". It aims to foster an OIC-wide coordinated approach to curb and control the spread of tobacco epidemic in OIC countries. This initiative focuses on training and capacity building programs to facilitate the development and implementation of sustainable national tobacco control strategies in OIC countries. In accordance with the decisions and resolutions of the First Islamic Conference of Health Ministers (2007), major objectives of the Tobacco Free OIC initiative can be listed as follows:

- to increase public awareness about controlling tobacco use by providing evidence-based knowledge and information, and by this way, to prevent children from starting tobacco use;
- to establish OIC networks and partnerships to exchange experiences and best practices of tobacco control strategies, initiatives, projects and programs; and
- to build the capacity of relevant organizations or institutions for better policy coordination in order to achieve the goal of Tobacco Free OIC.

The OIC Strategic Health Programme of Action 2014-2023 (OIC-SHPA) also lists actions need to be taken related with fight against tobacco use under several thematic areas. To this end, both at the global and the OIC level, there are initiatives and mechanisms to cope with tobacco use. In cooperation with international organisations, OIC countries can effectively reduce tobacco use and can save many lives.

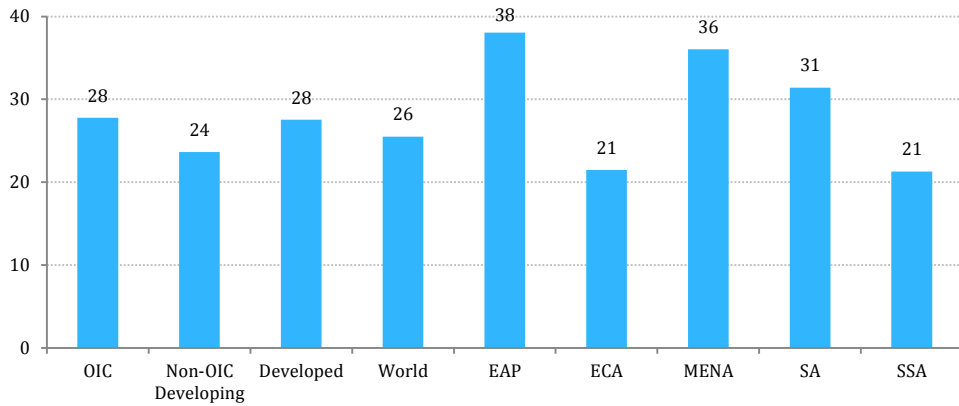
3.6.3 Insufficient Physical Activity

The WHO defines physical activity as any bodily movement produced by skeletal muscles that require energy expenditure – including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits. Both, moderate and vigorous intensity physical activity brings health benefits. Insufficient physical activity is one of the 10 leading risk factors for death worldwide. Globally, 3.2 million deaths each year are attributable to insufficient physical activity, according to the WHO estimates.

Insufficient physical activity is a key risk factor for non-communicable diseases (NCDs) such as cardiovascular diseases, cancer and diabetes. Physical activity has significant health benefits and contributes to prevent NCDs. More than 80 per cent of the world's adolescent population is insufficiently physically active. Socio-economic and socio-cultural factors affect lifestyles of people. With increased urbanisation, some additional factors started to influence physical activity. The common reasons behind physical inactivity in urban areas are: violence, high-density traffic, low air quality, pollution, and lack of parks, sidewalks and sports/recreation facilities.

Figure 3.23 shows the prevalence of insufficient physical activity among adults across country groups. According to this, among OIC countries with data available, on average, the prevalence of insufficient physical activity was the highest (27.8 per cent) among all country groups in 2010. The world average was measured as 25.5 per cent in the same year (Figure 3.23). Across the OIC regions, the highest prevalence of insufficient physical activity was seen in EAP with an average rate of 38 per cent. SSA had the lowest prevalence of insufficient physical activity (21.3 per cent) in 2010 (Figure 3.23).

The member states of the WHO have agreed to reduce insufficient physical activity by 10 per cent by 2025. In order to encourage physical activity, governments need to ensure that: walking, cycling and other forms of active transportation are accessible and safe for all; labour and workplace policies encourage physical activity; schools have safe spaces and facilities for students to spend their free time actively; physical education supports children to develop behaviour patterns that will keep them physically active throughout their lives; and sports and recreation facilities provide opportunities for everyone to do sports. In this regard, policy makers in OIC countries need to make necessary arrangements to promote more physically active life-style in order to have more healthy generations and to reduce the pressure on social security systems.

Figure 3.23: Insufficient Physical Activity among 18+ Population (per cent), 2010

Source: SESRIC staff calculations based on WHO Data Repository

3.6.4 Obesity

Obesity is defined as abnormal or excessive fat accumulation that may impair health. The WHO defines obesity as body mass index (BMI) greater than or equal to 30.¹ Obesity leads to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. Risks of coronary heart disease, ischemic stroke and type 2 diabetes mellitus increase steadily with increasing BMI. A higher BMI also raises the risk of cancer of the breast, colon, prostate, endometrium, kidney and gall bladder. Mortality rates go up with increasing degrees of overweight, as measured by body mass index.

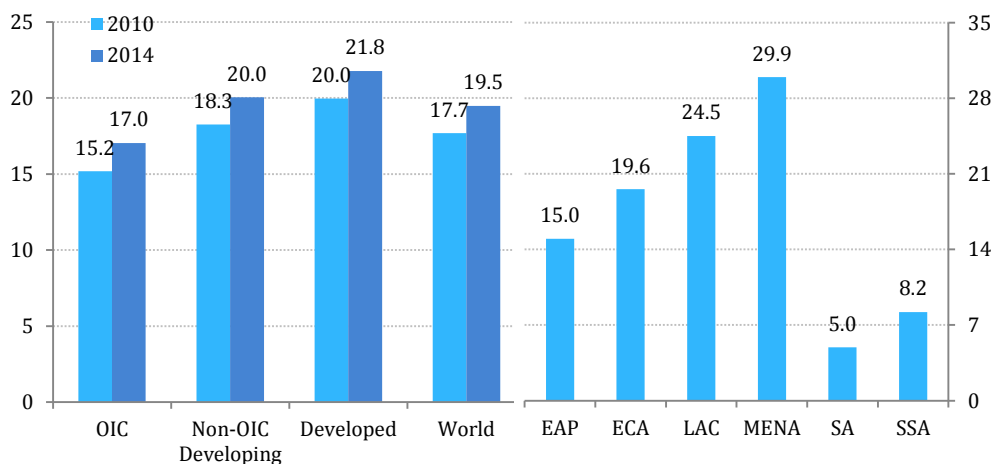
The worldwide obesity has more than doubled since 1980. In 2014, more than 1.9 billion adults, 18 years and older, were overweight that their BMI exceeds 25. Of these over 600 million were obese. Globally, 13 per cent of adults aged 18 years and over were obese in 2014.

The prevalence of raised body mass index increases with the income level of countries. According to the WHO estimates, for obesity the overall prevalence is over four times higher in high income countries compared to low income countries. According to Figure 3.24 (left), in the OIC group the prevalence of obesity increased from 15.2 per cent in 2010 to 17 per cent in 2014. In developed countries, the average prevalence rate reached 21.8 per cent in 2014. Among all country groups, the average of OIC countries was the lowest in 2014 in terms of prevalence of obesity. Among the OIC regions, MENA is exposed to obesity the most with an average prevalence rate of 29.9 per cent. SA has the lowest obesity prevalence rate among all OIC regions with an average prevalence rate of 5 per

¹ Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m²).

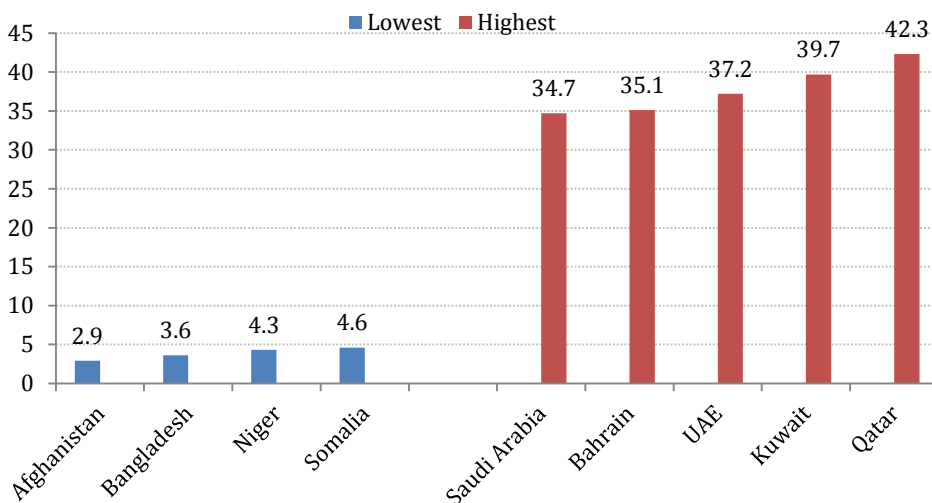
cent. At the individual country level, prevalence of obesity ranged from 2.9 per cent in Afghanistan to 42.3 per cent in Qatar (Figure 3.25).

Figure 3.24: Prevalence of Obesity (among 18+ Population, per cent), 2014



Source: SESRIC staff calculations based on WHO, Data Repository

Figure 3.25: OIC Countries with Lowest/Highest Prevalence of Obesity among Adults, 18+ Years (per cent of Population)



Source: WHO, Data Repository

Obesity is preventable. At the individual level, people can limit energy intake from total fats and sugars; increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts; engage in regular physical activity (60 minutes a

day for children and 150 minutes per week for adults). The food industry can play a significant role in promoting healthy diets by reducing the fat, sugar and salt content of processed foods; ensuring that healthy and nutritious choices are available and affordable to all consumers; practicing responsible marketing especially those aimed at children and teenagers; and ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace. In that picture, policy-makers in OIC countries are responsible for designing policies to promote healthy diets, to encourage increased physical activity and regulate food industry for the benefit of their people.

MATERNAL, NEW BORN AND CHILD HEALTH AND NUTRITION

4

Health is vital for the well-being of all human beings. According to the definition of WHO, health does not only mean an absence of illness or disease but it is a multidimensional concept that encompasses the state of physical, mental and social well-being of a person. Right to health is vital for everyone, but it is especially important for mothers and children because they are vulnerable and more at risk to illness and health complications. Maternal, new born and child health (MNCH) basically refers to health of women and babies during pregnancy, childbirth and after childbirth. Provision of quality care during this period is very critical for the health and very survival of mother and infant.

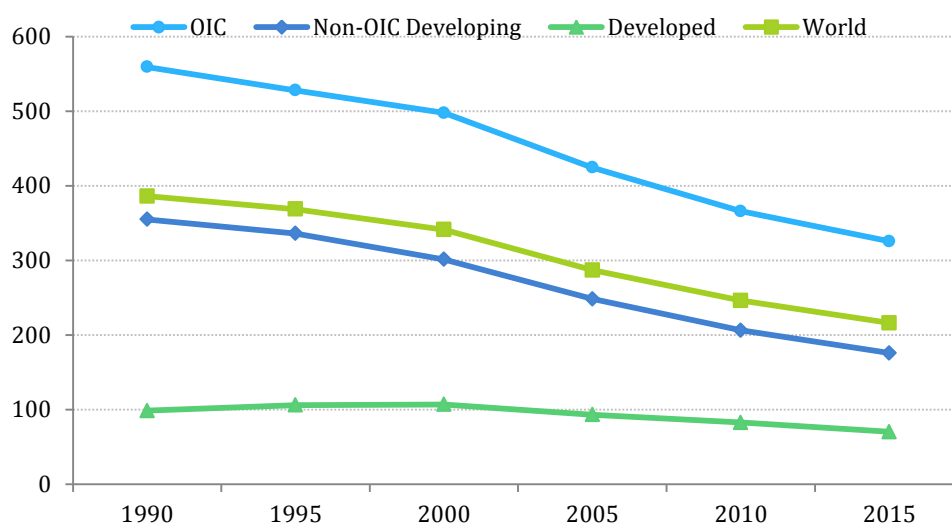
4.1 Maternal Mortality

Maternal mortality remained significantly high in the developing world. According to the latest estimates of the WHO, nearly 300 thousand women died from preventable causes related to pregnancy and childbirth in 2015. Almost all of these deaths were reported in developing countries, especially in Sub-Saharan Africa and Asia. About 75 per cent of all maternal deaths in the world are caused by five major complications during and after the pregnancy (WHO, 2014a) Maternal Mortality Fact Sheet No.348). Among these complications, severe bleeding (mostly bleeding after childbirth) is the top cause of maternal deaths, accounting for 27 per cent of maternal deaths, followed by high blood pressure during pregnancy (14 per cent), infections usually after childbirth (11 per cent), complications from delivery (9 per cent) and unsafe abortion (8 per cent).

In OIC countries, about 149 thousand women died from preventable causes related to pregnancy and childbirth in 2015, corresponding to 49 per cent of the world total maternal deaths. Maternal mortality remained highly concentrated in a handful of OIC countries. In 2015, almost half (49.7 per cent) of the OIC's total maternal deaths were reported only in three countries, namely: Nigeria, Pakistan, and Indonesia. Among these high burden countries, Nigeria alone accounted for nearly two third (38.9 per cent) of OIC total maternal deaths in 2015. Among others, Pakistan accounted for 6.5 per cent followed by Indonesia (4.3 per cent).

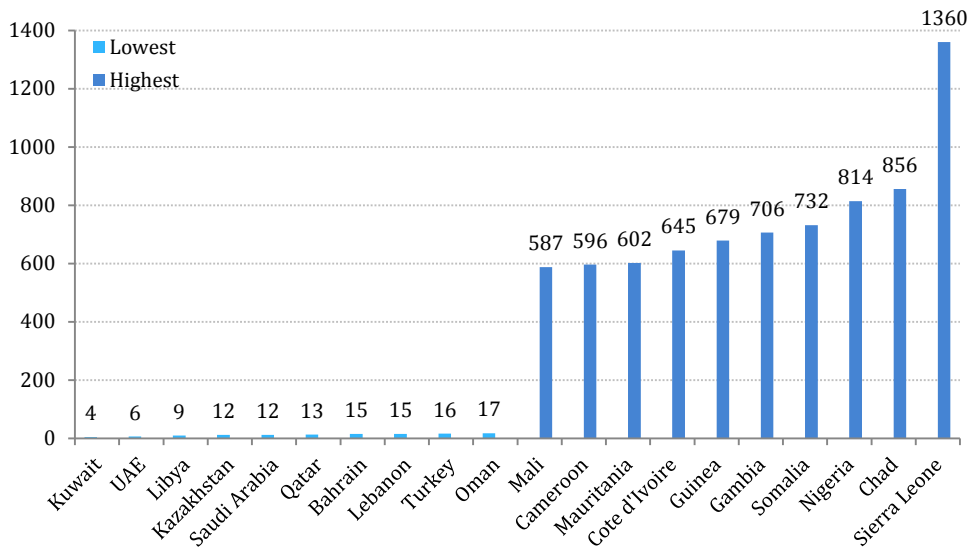
Under the MDG 5, all countries were committed to reducing maternal mortality by three quarters between 1990 and 2015. Efforts made to achieve this target have actually paid off and maternal mortality rate (MMR) has declined from 386 deaths per 100,000 live births in 1990 to 216 deaths in 2015, corresponding to a decrease by 44 per cent (Figure 4.1). A similar trend can be observed for non-OIC developing countries with an overall decline of 50 per cent in MMR. In line with the global trends, OIC countries also witnessed some improvement in maternal health conditions and MMR declined from 559 deaths in 1990 to 326 deaths in 2015, corresponding to a decrease by 42 per cent. However, despite this improvement, MMR in OIC countries remained significantly higher than the averages of other groups.

Figure 4.1: Maternal Mortality Rate (per 100,000 live births)



Source: SESRIC staff calculations based on UNICEF Data

At the individual country level (Figure 4.2), Sierra Leone recorded the highest MMR (1,360 maternal deaths per 100,000 live births), followed by Chad (856 deaths), and Nigeria (814 deaths). Among these countries, Sierra Leone is ranked 1st with respect to highest MMR in the world, Chad is ranked 3rd, and Nigeria is ranked 4th. In contrast, Kuwait recorded the lowest MMR with only 4 maternal deaths per 100,000 live births followed by United Arab Emirates (6 deaths), and Libya (11 deaths). Between 1990 and 2015, 25 OIC countries registered more than 50 per cent decrease in MMR. Majority of these countries are from Middle East and North Africa (11 countries) and Europe and Central Asia (5 countries). On the other hand, two OIC countries namely Guyana and Surinam reported increase in MMR.

Figure 4.2: OIC Countries with Lowest/Highest MMR, 2015

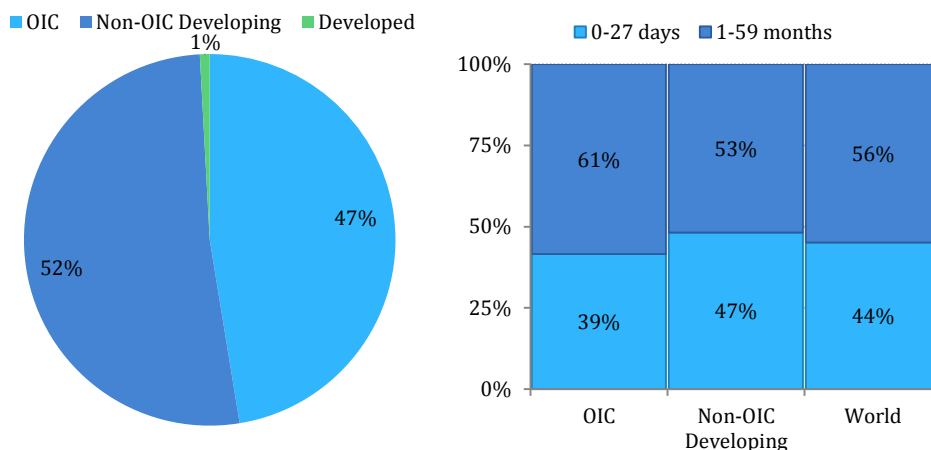
Source: UNICEF Data

4.2 New-born and Child Mortality

The child mortality rate is the number of deaths of children under 5 per 1,000 live births. It is one of the most important indicators on the state of child health which basically reflects the overall coverage and effectiveness of health care services along with socio-economic development in a country. It was the benchmark indicator for the United Nations Millennium Development Goal 4, which set a target to reduce child mortality rate by two-thirds, between 1990 and 2015, the under-5 mortality rate (UN, 2014). Globally, around 6 million children died before reaching their fifth birthday in 2015. A child's risk of dying is highest in the neonatal period; the first 28 days of life. In 2015, 44 per cent of under-five deaths were reported during the neonatal period. The Majority of these deaths can easily be prevented by ensuring access to effective safe childbirth and neonatal care services (WHO, 2015).

Under-five mortality remained highly concentrated in developing countries which accounted for over 99 per cent of world total in 2015. This means that on average about 16,000 children died every day in developing countries. Being a substantial part of the developing world, OIC countries accounted for 47.4 per cent of the world total under-five deaths in 2015. In other words, about 7700 under-five children died every day in OIC countries. Over 39 per cent of child deaths in OIC countries occurred during the first month of life (Figure 4.3).

Figure 4.3: Distribution and Age Structure of Under-5 Deaths, 2015

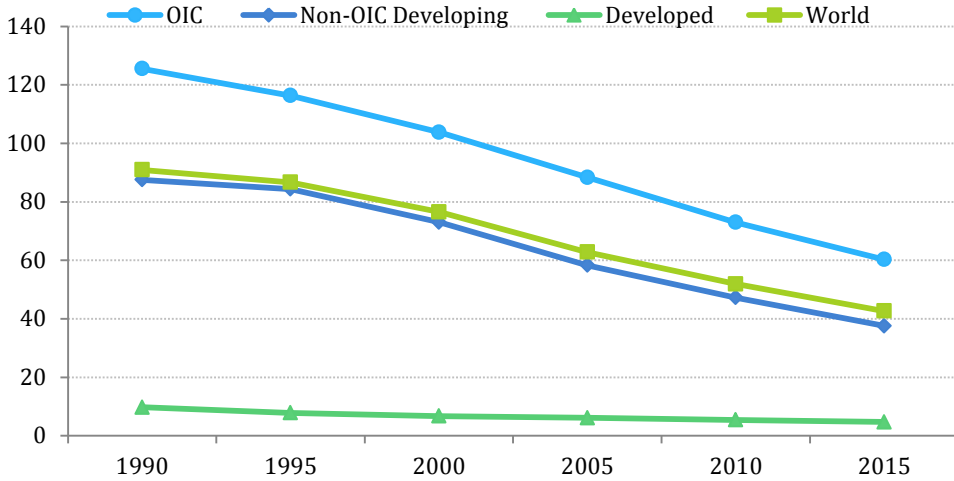


Source: SESRIC staff calculations based on UN Inter-agency Group for Child Mortality Estimation

Over the years, child mortality has shown a declining trend across the globe (Figure 4.4) where the average under-five child mortality rate (U5MR) has decreased by 53 per cent since 1990 to 43 deaths per 1000 live births in 2015. Non-OIC developing countries also registered remarkable progress with 57 per cent decline in U5MR since 1990. In line with the global trends, child mortality situation has also been improved in the OIC countries. Starting from a higher U5MR of 126 deaths per 1000 live births in 1990, OIC countries managed to reduce U5MR by 52 per cent to 60 per 1000 live births by 2015. Nevertheless, despite this improvement, OIC group made the least progress in reducing child deaths since 1990. As of 2015, one in 17 children in OIC countries dies before their fifth birthday compared to one in 27 in other developing countries and one in 23 children in the world.

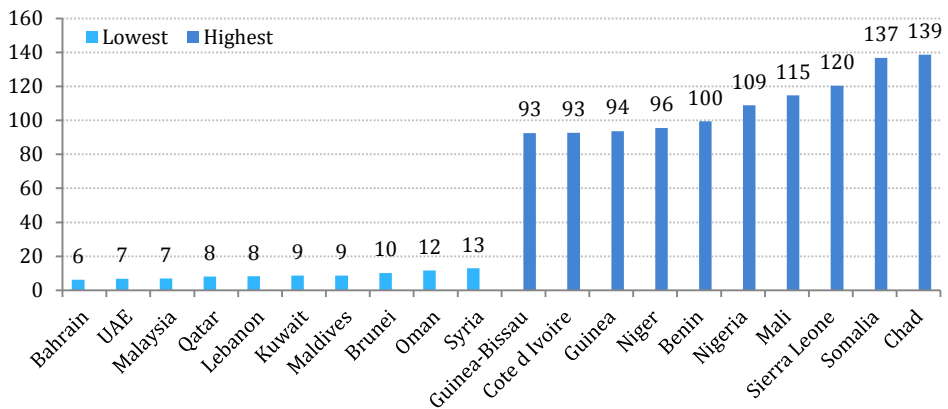
At the national level, many OIC countries have made great strides against the child mortality over the last two decades. During 1990-2015, over two-third (66 per cent) reduction was recorded in 22 OIC countries and in 16 countries the reduction was ranged between 50 to 65 per cent. As of 2015, U5MR in OIC countries ranged from a low of 6 deaths per 1000 live births in Bahrain to a high of 139 in Chad (Figure 4.5). Seven OIC countries have registered U5MR lower than 10 deaths per 1000 live births. In contrast, 10 OIC countries from SSA region registered U5MR higher than 90 deaths per 1000 live births. Seven of these ten countries are ranked among the top-10 countries with the highest U5MR in the world. In 2015, Chad was ranked 2nd with respect to highest U5MR in the world followed by Somalia (ranked 3rd), Sierra Leone (ranked 5th), Mali (ranked 6th), Nigeria (ranked 7th), Benin (ranked 8th) and Niger (ranked 10th).

Figure 4.4: Under 5 Child Mortality Rate (per 1000 live births)



Source: SESRIC staff calculations based on UN Inter-agency Group for Child Mortality Estimation

Figure 4.5: OIC Countries with Lowest and Highest U5MR, 2015



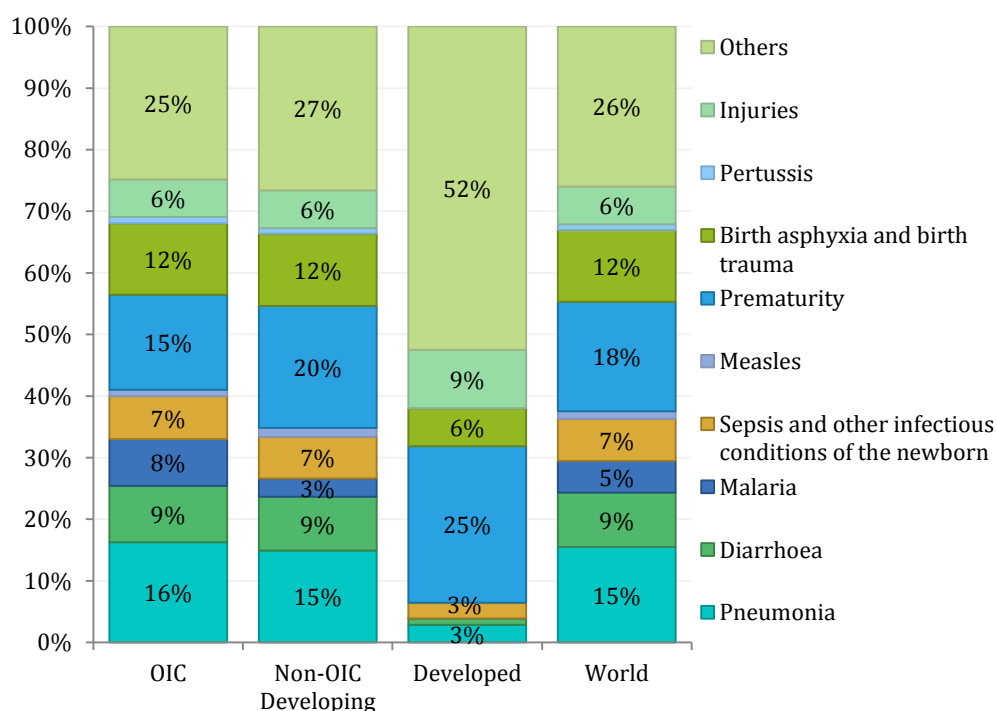
Source: UN Inter-agency Group for Child Mortality Estimation

4.3 Major Causes of Child Mortality

Globally, infectious diseases, pregnancy, and birth related complications caused over three quarters of total deaths in children under five in 2015. In fact, these causes are largely preventable and/or treatable by ensuring access to simple and affordable interventions like vaccination, antenatal health care and skilled attendance of birth. As shown in Figure 4.6, prematurity was the largest single cause of death in children under five in 2015, and approximately 50 per cent of under-five deaths were due to infectious causes like pneumonia /sepsis (neonatal pneumonia), diarrhoea, malaria and other infectious diseases. A similar situation is also observed in the case of non-OIC developing countries where leading causes

of death among under-five children are prematurity, pneumonia, birth asphyxia, and diarrhoea. In contrast, causes of childhood deaths in developed countries are more skewed toward complications associated with pregnancy and delivery than the infectious diseases. The major causes of under-five mortality in OIC countries are similar to those in other developing countries. As shown in Figure 4.6, 40 per cent of under-five deaths were caused by three infectious diseases: pneumonia/sepsis (23 per cent), diarrhoea (9 per cent) and malaria (8 per cent). Among the pregnancy and birth related complications, prematurity (15 per cent) remained the major cause of under five deaths followed by birth asphyxia (12 per cent) and injuries (6 per cent).

Figure 4.6: Major Causes of Child Mortality, 2015



Source: SESRIC staff calculations based on WHO, Data Repository

4.4 Maternal, New-born and Child Health Care Services

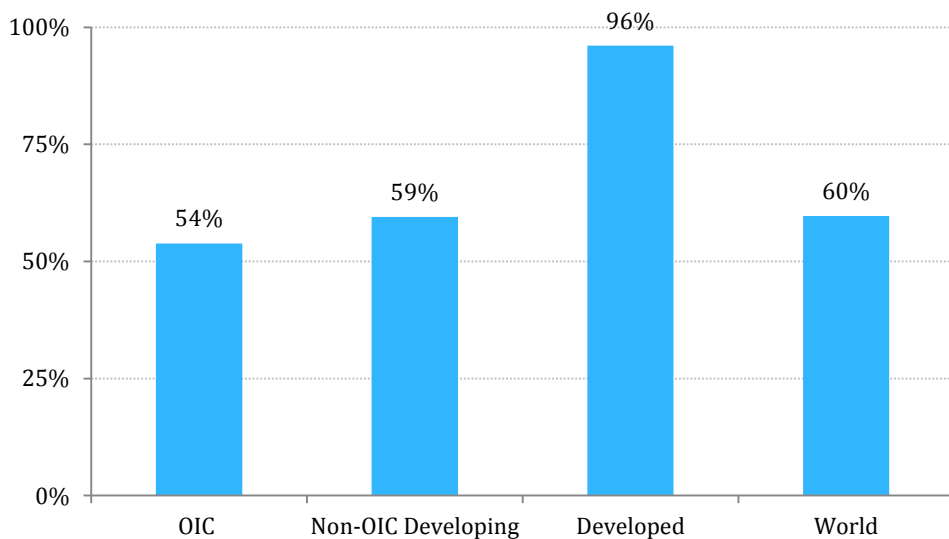
Health experts are of the view that the majority of maternal and child deaths are preventable and interventions like antenatal care, skilled attendance during birth, immunization, and early care seeking for pneumonia, diarrhoea and malaria are critical for the survival and well-being of mothers and children. This sub-section examines the performance of the OIC countries in terms of the coverage of some of these selected interventions.

4.4.1 Antenatal Care

Antenatal care (ANC) and counselling is the entry point to the formal health care system and provides a solid base to monitor and improve the health of mother and baby by identifying and preventing/controlling antenatal complications at the earliest stage (WHO, 2010). Antenatal care (ANC) coverage measures the proportion of total pregnant woman aged 15-49 who visited a skilled health professional for reasons related to pregnancy. For the quality and effectiveness of ANC, number of visits and their timing is very important.

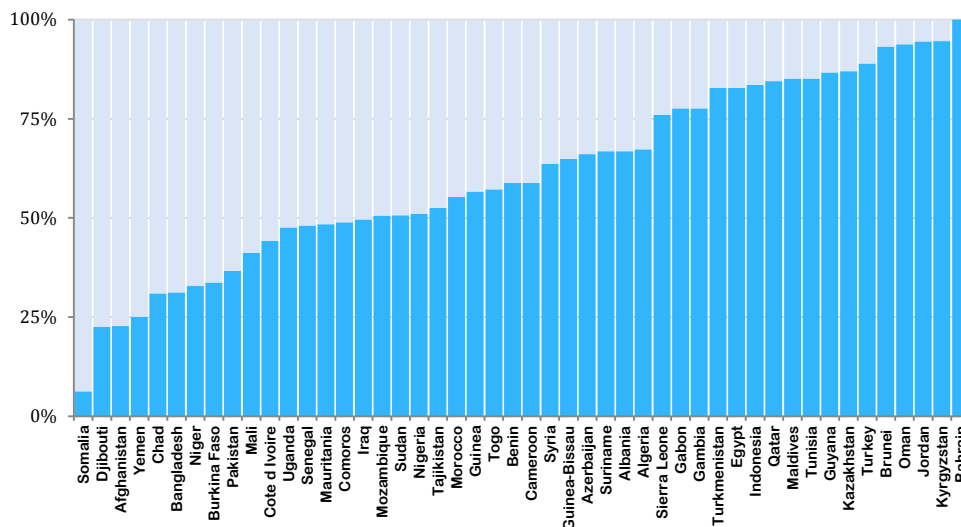
The provision of quality antenatal care remained a major concern in many OIC countries. During the period 2010-2015, around 54 per cent of total pregnant women in OIC countries benefited from the recommended four antenatal checks up (Figure 4.7). The OIC average remained below the averages of the non-OIC developing countries and the world.

Figure 4.7: Antenatal Care Coverage, 2010-2015*



Source: SESRIC staff calculations based on UNICEF Data. Most recent year available*

At the individual country level, more than 80 per cent of pregnant women visited a health clinic four times in 14 OIC countries whereas; this ratio ranged from 50 per cent to 78 per cent in 19 other countries. Somalia, Djibouti and Afghanistan recorded the lowest ANC coverage rate where only 6.3 per cent, 22.6 per cent and 22.7 per cent of women visited health facility four times during pregnancy, respectively (Figure 4.8). Over all, ANC coverage rate remained less than 50 per cent in 16 member countries. Majority of the OIC countries with the lowest antenatal care coverage are located in the SSA region (11 countries).

Figure 4.8: ANC Coverage in OIC Countries, 2010-2015*

Source: UNICEF Data. * Most recent year available

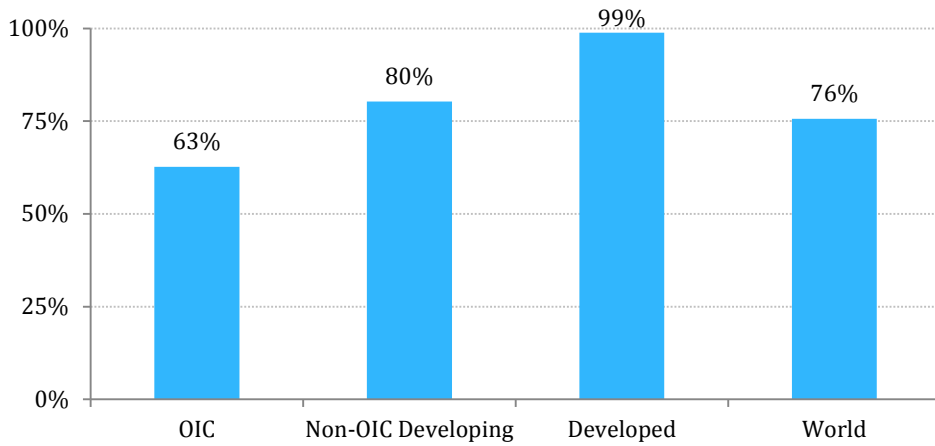
4.4.2 Births Attended by Skilled Health Personnel

Skilled health care and assistance at the time of delivery are critical for the health and very survival of both mother and baby. According to the latest estimates of the WHO, globally, about 2 million maternal and new born deaths every year are caused by lack of proper health care during labour and child birth. These deaths are largely preventable by ensuring assistance of skilled health personnel - a doctor, nurse or midwife - during the birth.

According to the latest estimates, globally around one fourth (24 per cent) of births are still taking place without skilled assistance and care (Figure 4.9). Majority of these unassisted deliveries are occurring in developing countries. In 2010-2015, a doctor, nurse or midwife assisted 63 per cent of deliveries in OIC countries. In contrast, this ratio was recorded at 80 per cent in non-OIC developing countries and 76 per cent in the world.

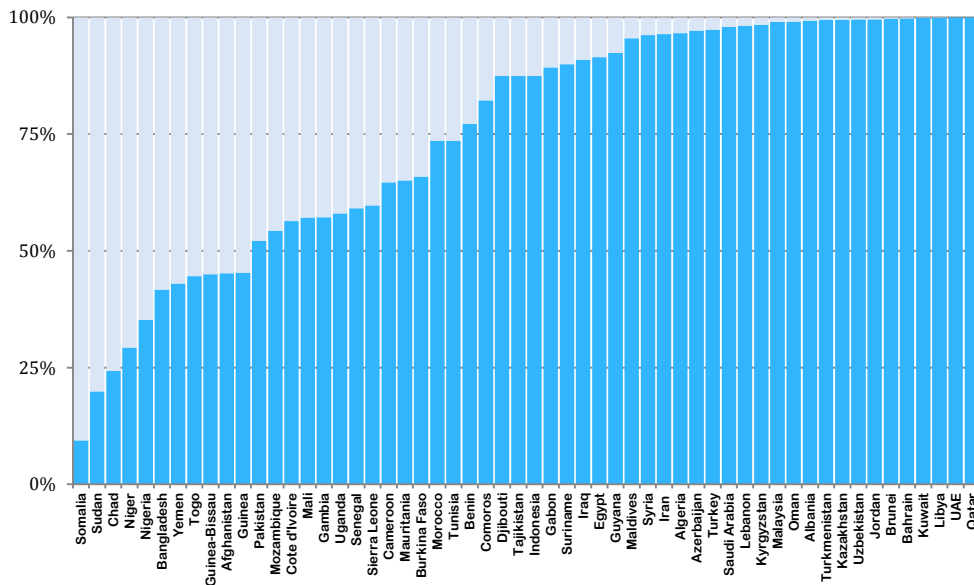
Over the years, the majority of OIC countries witnessed improvement in number of births assisted by skilled health personnel. During 2010-2015, health personnel assisted more than 90 per cent of deliveries in 26 member countries (Figure 4.10). Majority of these best performing countries are from the MENA (14 countries) and ECA (7 countries) regions. In contrast, less than half of total births were assisted by skilled health personnel in 11 OIC countries. The situation remained particularly alarming in Somalia, Sudan, Chad, and Niger where more than 70 per cent of total births took place without any skilled health care and assistance at the time of delivery (Figure 4.10).

Figure 4.9: Births Attended by Skilled Health Personnel, 2010-2015*



Source: SESRIC staff calculations based on UNICEF Data.*Most recent year available

Figure 4.10: Births Attendance by Skilled Health Personnel, 2010-2015*



Source: UNICEF Data.* Most recent year available

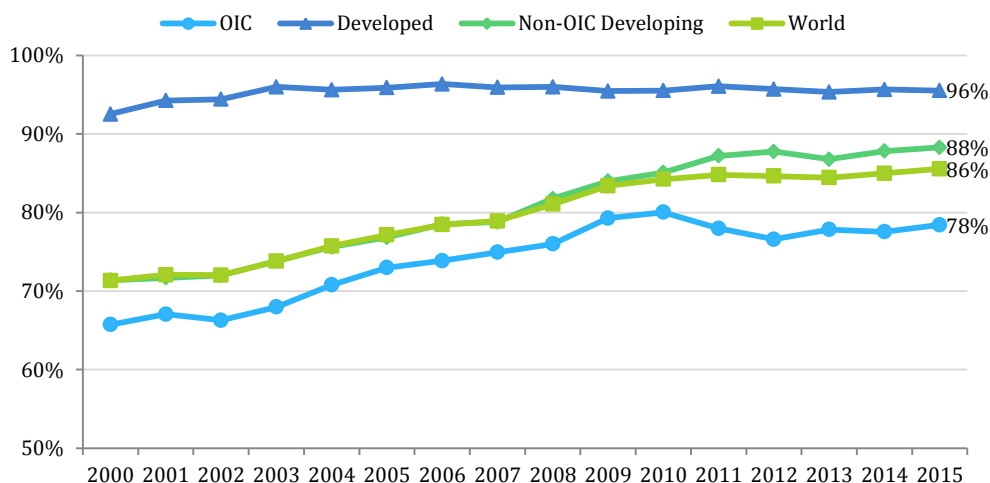
4.4.3 Immunization

Keeping in view the age-specific health risks, childhood immunization is one of the most efficient and effective methods of preventing diseases like measles, meningitis, diphtheria, tetanus, pertussis (whooping cough), yellow fever, polio and hepatitis b. Over the years, serious efforts were exerted worldwide to develop and improve national immunization programmes and coverage by ensuring excess

to needed vaccines and training for health workers. These noble efforts towards increasing immunization coverage helped to prevent millions of child deaths across the world.

Coverage of DTP3, a combination of vaccines against three infectious diseases: diphtheria, tetanus and pertussis (whooping cough), is used as the benchmark indicator of routine immunization programme in a country/region by the United Nations Children's Fund (UNICEF) and WHO (WHO, 2015a). Globally, DTP3 immunization coverage during the first year of life has increased from 71 per cent in 2000 to 86 per cent in 2015, corresponding to an increase of 14 percentage points (Figure 4.11). A similar trend prevailed in non-OIC developing countries with immunization coverage climbing up from 71 per cent in 2000 to 88 per cent in 2015. OIC countries also witnessed improvement in DTP3 vaccination among one year olds as their coverage rate increased from 67 per cent in 2000 to 78 per cent in 2015. Though OIC coverage remained below the world and non-OIC developing countries averages, they are catching up rapidly with a 13 percentage point increase during 2000-2015.

Figure 4.11: DTP3 Immunization Coverage

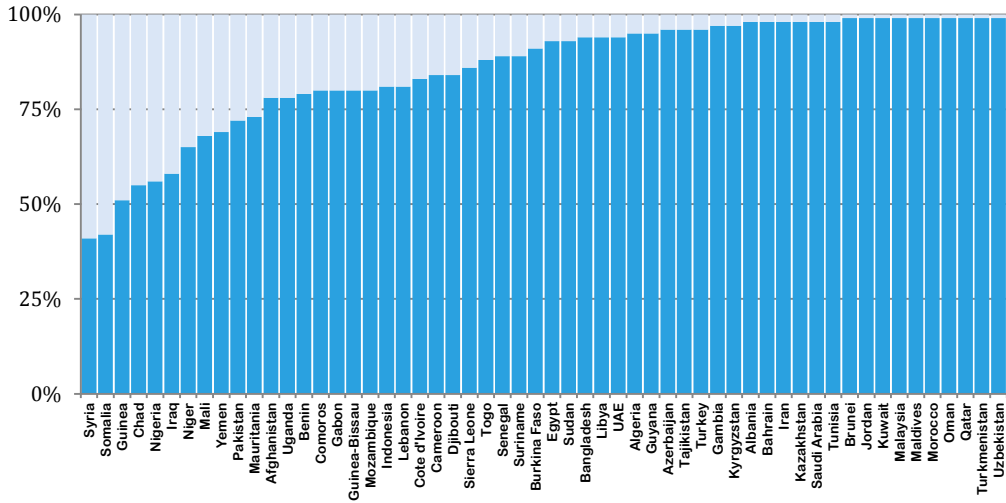


Source: SESRIC staff calculations based on WHO, Data Repository

DTP3 immunization coverage remained quite high in majority of OIC countries. In 2015, 30 OIC countries recorded coverage rate of 90 per cent or more. Among these 30 countries, seven OIC countries registered immunization coverage of 99 per cent (Figure 4.12). Among others, 12 countries were within the 80-89 per cent range and coverage rate remained between 70 to 79 per cent for seven other OIC countries. In contrast, about one third of one year old children were not immunized against DTP in seven OIC countries. Among these countries, as shown

in Figure 4.12, lowest coverage rate was recorded in Syria (41 per cent) followed by Somalia (42 per cent) and Guinea (51 per cent).

Figure 4.12: DTP3 Immunization Coverage, 2015



Source: WHO, Data Repository

4.5 Prevention and Control of Infectious Diseases

Globally, over 36 per cent of the total under-five deaths are caused by only three infectious diseases: pneumonia, diarrhoea, and malaria. The combined burden of these three diseases stands at 33 per cent of the total under-five deaths in non-OIC developing countries and over 40 per cent in OIC countries (Figure 4.6). The majority of these deaths are preventable by using cost-effective, affordable and easy to implement measures.

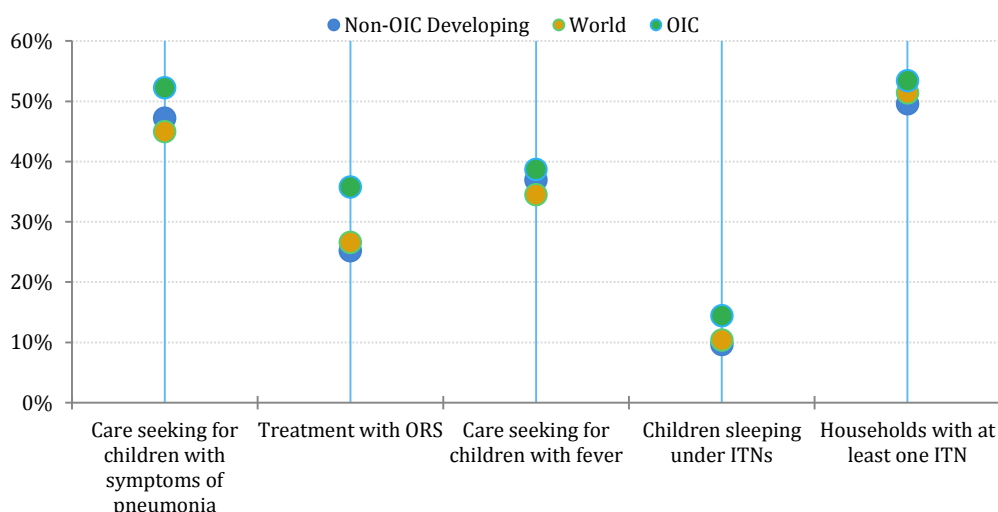
Reduction of childhood mortality caused by acute respiratory infections remained an elusive goal mainly due to incomplete immunization schemes, malnutrition, late care seeking and inadequate treatment. The latest estimates show that 45 per cent of children with symptoms of pneumonia in the world were taken to a health provider for check-up and only 36 per cent received antibiotic treatment in 2010-2015. A similar situation prevails both in OIC and non-OIC developing countries. Nevertheless, care seeking for pneumonia was comparatively high in OIC countries with a coverage rate of 52 per cent (Figure 4.13).

Diarrhoea is another major killer of children, accounting for 9 per cent of world's total deaths of children under-5. Although childhood diarrhoea can be treated with a simple solution made from oral rehydration salts (ORS), just over one fourth of

children (27 per cent) with diarrhoea worldwide were treated with ORS in 2010-2015. The coverage rate was recorded at 36 per cent in OIC and 25 per cent in other developing countries (Figure 4.13).

Globally, over 5 per cent of total deaths in children are attributed to malaria. Most of these deaths occurred in OIC countries which accounted for 62 per cent of the global burden in 2010-2015. Sleeping under insecticide-treated nets (ITNs) is the most effective way to prevent the malarial infection and reduce malaria related deaths. Nevertheless, worldwide, only 10 per cent of children were sleeping under ITNs in 2010-2015. Though coverage rate remained comparatively better in OIC countries, still only 14 per cent of total children were sleeping under ITNs (Figure 4.13). On average, around half of the total households had at least one ITN in non-OIC developing countries compared to the OIC average of 53.4 per cent.

Figure 4.13: Coverage of Measures for Infectious Diseases, 2010-2015*

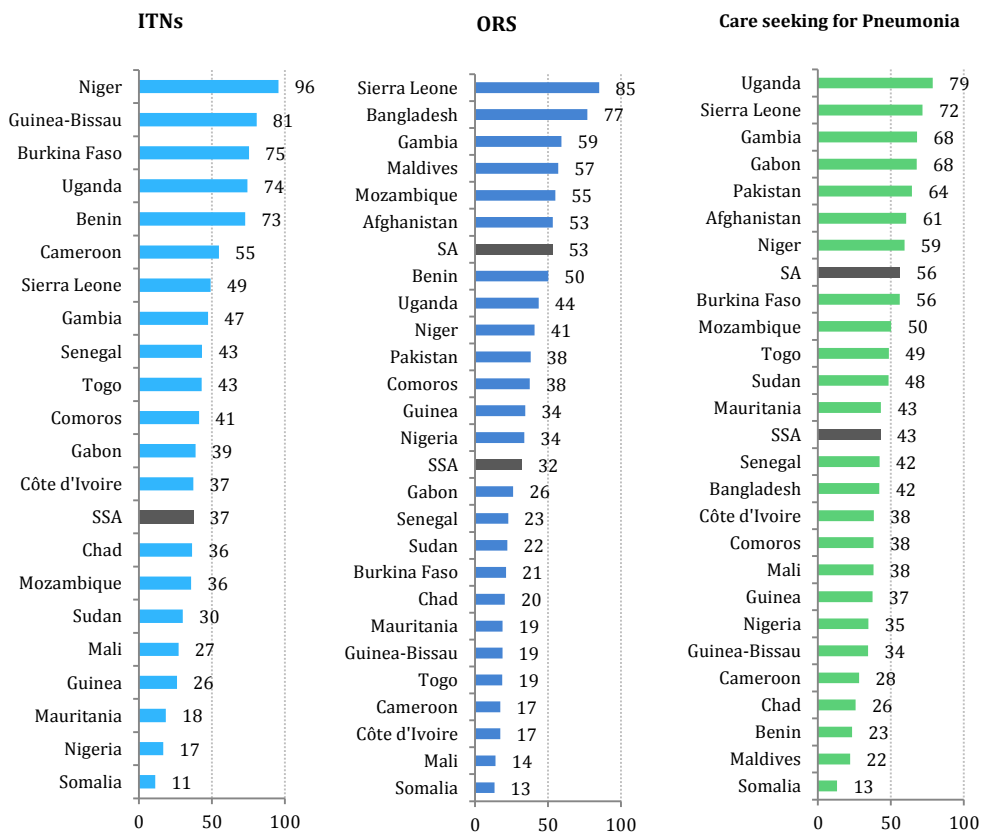


Source: SESRIC staff calculations based on UNICEF Data.* Most recent year available

Deaths of children caused by pneumonia, diarrhoea and malaria remained highly concentrated in two OIC regions namely: Sub-Saharan Africa and South Asia. As of 2015, SSA region accounted for 99 per cent of under-five deaths caused by malaria in OIC countries. Despite this heavy toll, recent estimates show that only 37 per cent of children in this region sleep under ITNs and only a half of the total households (51 per cent) had at least one ITN. For many countries in SSA region, ITNs coverage remained even lower than the regional average (Figure 4.14). Over all, the lowest coverage was recorded in Somalia where only 11 per cent children were sleeping under ITNs followed by Nigeria (17 per cent), and Mauritania (18 per cent).

In 2005-2015, 90 per cent of diarrhoea-related child deaths in OIC countries were reported in SSA (64 per cent) and SA (26 per cent) regions. Nevertheless, even in these high burden regions, ORS treatment remained low with just over half (53 per cent) of children with diarrhoea treated with ORS in SA and only 31 per cent in SSA region. Usually, OIC countries with highest burden of diarrhoea related deaths recorded the lowest coverage of ORS treatment. As shown in Figure 4.14, less than 30 per cent of children with diarrhoea were treated with ORS in 12 countries, all from SSA region. Somalia recorded the lowest coverage of ORS (13 per cent) followed by Mali (14 per cent) and Côte d'Ivoire (17 per cent).

Figure 4.14: Coverage of Measures for Infectious Diseases (per cent), 2010-2015*



*Source: SESRIC staff calculations based on UNICEF Data.*Most recent year available*

In case of pneumonia, 85 per cent of OIC’s child deaths were reported in SSA (60 per cent) and SA (25 per cent) regions. Once children develop symptoms of pneumonia, early care seeking and prompt treatment can save their lives. Yet in 2010-2015, only 43 per cent children with symptoms of pneumonia in SSA and 56 per cent in SA were seen by a health provider. At the individual country level, as shown in Figure 4.14, more than two thirds of children with pneumonia were

taken to a health provider in four OIC countries namely: Uganda (79 per cent), Sierra Leone (72 per cent), Gambia (68 per cent) and Gabon (68 per cent). On the opposite side of the scale, care seeking for pneumonia remained lowest in Somalia (13 per cent) followed by Maldives (22 per cent) and Benin (23 per cent).

4.6 Nutrition

Proper child nutrition is one of the most powerful tools to raise a healthy and productive generation. It helps not only in improving children's chances of survival during the early years of life but also contribute towards their physical and cognitive development. On the other hand, malnutrition not only increases the risk of child death from common illness such as diarrhoea, pneumonia, and malaria but can also lead to stunted growth, which is irreversible and associated with impaired cognitive ability and reduced school and work performance. According to the UNICEF (2013a), nutritional status of children is assessed through measurement of their weight and height. The most commonly used indicators of nutritional status are stunting, underweight, wasting, and overweight.

4.6.1 Incidence of Malnutrition

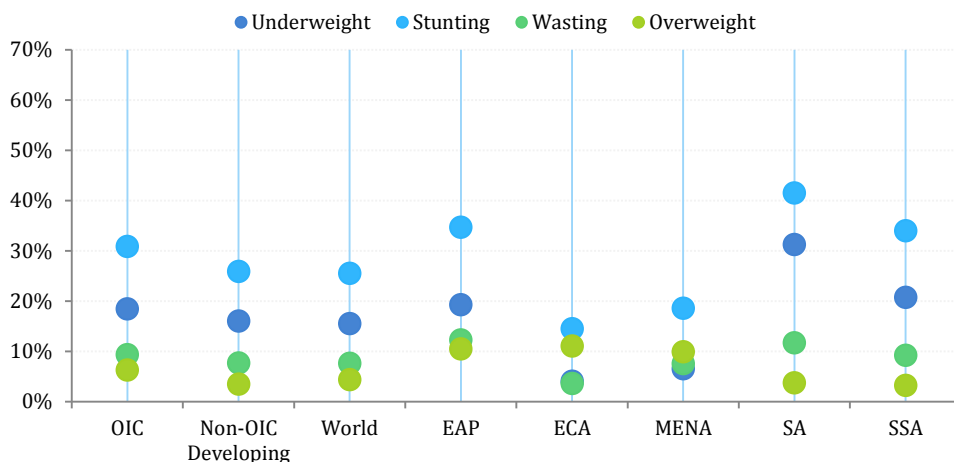
The latest estimates of the WHO show that about 170 million children worldwide, mostly from developing countries, have stunted growth in 2010-2015. The number of the stunted children, both severe and moderate, accounted for 2.5 per cent of the world total population under five. OIC countries bear 39 per cent of global burden of stunted children in 2010-2015. As shown in Figure 4.15, about 30.8 per cent of under-five children in OIC countries were stunted in 2010-2015 compared to 26 per cent in other developing countries and in the world. Among the OIC regions, highest prevalence of stunting was recorded in SA (42 per cent), followed by EAP (35 per cent) and SSA (34 per cent). In terms of number of stunted children, these three regions accounted for 83 per cent of OIC's total stunted children in 2010-2015. Distribution of stunted children remained highly uneven across the OIC countries and more than half of OIC's stunted children were living in four countries namely: Pakistan (17 per cent of OIC total), Nigeria (15.3 per cent), Indonesia (13.5 per cent) and Bangladesh (8.3 per cent).

In 2010-2015, 15.5 per cent or 104 million children under five years of age in the world were underweight. Among the developing countries, non-OIC developing group accounted for the highest share of underweight children (61 per cent) followed by OIC countries (38.5 per cent). As shown in Figure 4.15, the proportion of children under five years old who were underweight was recorded at 18.4 per cent in OIC countries followed closely by the other developing countries (16 per cent). Among the OIC regions, as shown in Figure 4.15, underweight prevalence remained the highest in SA (31 per cent), followed by SSA (21 per cent) and EAP

(19 per cent). In terms of absolute numbers of underweight children, SSA and SA were home to about 80 per cent of total underweight children in OIC countries. About two third (65 per cent) of underweight children in OIC countries were living only in five countries namely: Pakistan (19.5 per cent of OIC total), Nigeria (15.4 per cent), Bangladesh (12.5 per cent), Indonesia (12.4 per cent) and Sudan (4.9 per cent).

Wasting is a major health problem. Globally, more than 51 million children under 5 years of age were moderately or severely wasted in 2010-2015, accounting for about 7.6 per cent of children in the world. Currently, about 40 per cent of wasted children in the world are living in OIC countries while this ratio stands at 60 per cent for other developing countries. Nevertheless, as shown in Figure 4.15, wasting prevalence remained more or less the same in OIC and other developing countries with a rate of 9.3 per cent and 7.7 per cent, respectively. Among the OIC regions, wasting is more prevalent in EAP, where one in every eight children (12.3 per cent) is moderately or severely wasted (Figure 4.15). A similar situation exists in SA region. The burden of wasting is highest in SSA and SA regions, which accounted for 63 per cent of total wasted children in OIC countries (with 37 per cent living in SSA and 26 per cent in SA). It is worth noting that more than half of OIC total wasted children were living only in four countries namely: Indonesia (16.6 per cent of OIC total), Pakistan (12.8 per cent), Nigeria (12.1 per cent) and Bangladesh (10.8 per cent).

Childhood overweight and obesity is on rise across the globe especially in the developing world. There are serious health consequences for childhood overweight and obesity including cardiovascular disease, diabetes, and many cancers. Globally, during 2010-2015, the number of overweight children under the age of five was estimated to be over 30 million. Though overweight was once associated mainly with high-income countries, 72 per cent of world total overweight children were living in low-and middle-income countries. As of 2010-2015, the prevalence of overweight among children remained higher in OIC countries (6.3 per cent) than the other developing countries (3.5 per cent). Overweight prevalence remained highest in ECA, EAP and MENA regions (Figure 4.15). These three regions accounted for 68 per cent of the OIC burden of overweight children (with 35 per cent living in MENA, 21 per cent in ECA and 13 per cent in EAP). At the country level, the highest proportion of the OIC's total overweight children (21 per cent) lives in Indonesia followed by Egypt (14 per cent) and Pakistan (8.7 per cent).

Figure 4.15: Nutritional Status of Under5 Children, 2010-2015*

Source: SESRIC staff calculations based on UNICEF Data.*Most recent year available

4.6.2 Feeding Practices

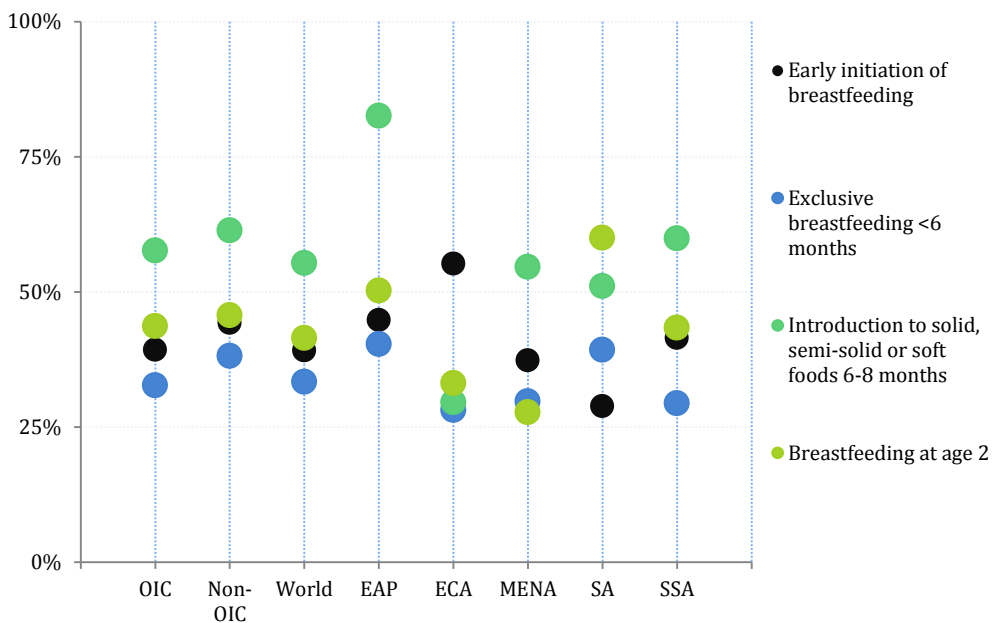
Proper feeding especially during the first two years of life is critical for a child's survival, growth and development. Regarding best child feeding practices, international health agencies like UNICEF and WHO recommend that infants should be breastfed within one hour of birth, breastfed exclusively for the first six months of life and continue to be breastfed up to 2 years of age and beyond. Starting at 6 months, breastfeeding should be combined with safe, age-appropriate feeding of solid, semi-solid and soft foods. According to the recent findings of UNICEF (2013), implementation of these interventions could reduce the global deaths of children under-5 years of age by 20 per cent.

The latest estimates on feeding practices among infants and young children reveal that in spite of its crucial importance for child nutrition a significant number of infants and children are not breastfed. Globally, only 39.1 per cent infants were breastfed within one hour of birth and 33.3 per cent were exclusively breastfed for 0-5 months (Figure 4.16). In line with the global trends, coverage of infant and child feeding practices remained more or less similar both in OIC and non-OIC developing countries. In OIC countries, only 39.3 per cent of infants were put to the breast within first hour of birth, and 32.7 per cent were exclusively breastfed during the first six months of life. The coverage of breastfeeding until age 2 remained comparatively better in OIC countries with 43.6 per cent of the total children breastfed until age 2. The estimates for appropriate feeding of children with adequate and safe complementary food reveal that 57.6 per cent of infants in OIC countries were introduced to solid, semi-solid or soft foods at 6 to 8 months. Coverage for introduction of complementary food for infants remained more or less the similar both in the world and non-OIC developing

countries. In general, OIC countries average for the early initiation of breast and exclusive breastfeeding for six months remained visibly lower than the non- OIC developing countries averages (Figure 4.16).

Coverage of recommended breastfeeding practices varies substantially among the OIC regions (Figure 4.16). The share of infants which are breastfed within one hour of birth ranges from 28.8 per cent in SA to 55.2 per cent in ECA region. On the other hand, in terms of continued breastfeeding at 2 years of age, coverage ranges from 27.7 per cent in MENA to 60 per cent in SA region. In general, data from three indicators relating to breastfeeding reveals that a significant number of children remained vulnerable to malnutrition in all OIC regions. Regarding the introduction of complementary food, EAP region registered the highest coverage rate of 82.5 per cent whereas, more than half of infants were introduced to solid, semi-solid or soft foods at 6 to 8 months in SSA, MENA and SA regions (Figure 4.16).

Figure 4.16: Coverage of Child Feeding Practices, 2010-2015*



Source: SESRIC staff calculations based on UNICEF Data. *Most recent year available

4.7 Micronutrient Deficiencies

Micronutrient deficiencies like deficiencies of vitamin A, iron, iodine, zinc and folic acid are very common among women and children in low income developing countries, including some OIC countries. While efforts to improve the nutritional status of children through breastfeeding and complementary feeding are crucial, interventions like supplementation are regarded as a fast-track approach to

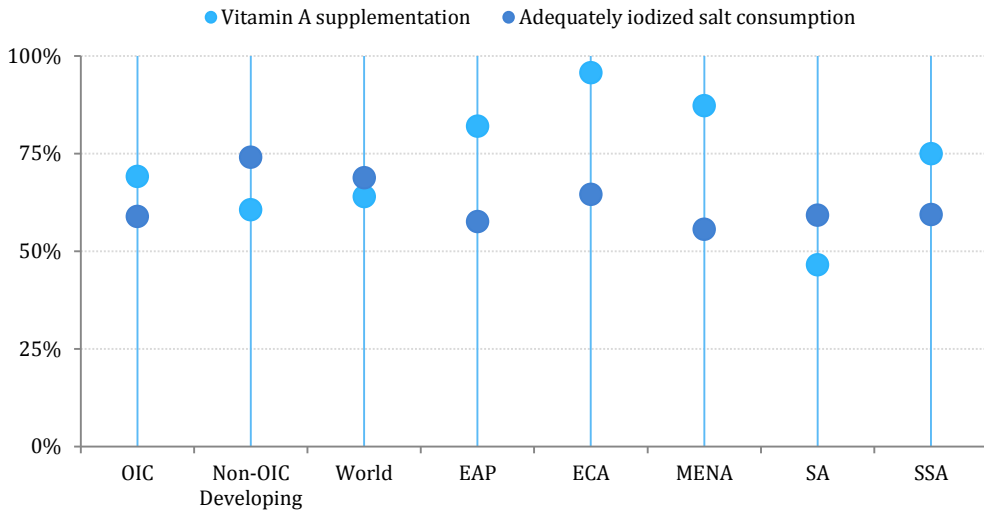
improve the intake of vital micronutrients among women and children. This subsection presents a brief overview of efforts exerted by OIC countries to improve the micronutrient deficiencies among children.

4.7.1 Vitamin A Supplement

According to the WHO (2015c), vitamin A deficiency is a public health problem especially in Africa and South-East Asia. It is not only the leading cause of preventable blindness in children but it also increases the risk of disease and death from severe infections. Globally, about two-third (64 per cent) of children aged 6 to 59 months received two doses of vitamin A in 2009-2013 (Figure 4.17). Coverage for vitamin A supplementation remained highest in OIC countries where 69 per cent of children received two doses of vitamin A. Non-OIC developing countries registered comparatively low coverage of 61 per cent. Vitamin A supplementation coverage varies greatly across the OIC regions. In 2009-2013, ECA registered the highest coverage rate of 96 per cent followed by MENA (87 per cent) and EAP (82 per cent). In contrast, children remained most vulnerable to vitamin A deficiency and hence blindness in SA, with more than half of children aged 6 to 59 months did not receive two doses of vitamin A (Figure 4.17).

4.7.2 Iodized Salt Consumption

Consumption of adequately iodized salt is another major intervention to prevent and improve the iodine deficiency and its consequences. Iodine is critical for fetal development. If mothers do not have adequate iodine intake, babies may develop a form of mental retardation called cretinism (WHO (2015c)). As a result, it does not only affect children's performance at school but also affects their productivity and the ability to find a job in adulthood. Globally, nearly 50 million people suffer from some degree of iodine deficiency-related brain damage. According to the latest estimates, globally, 69 per cent of households have adequately iodized salt (15 parts per million or more), but coverage varies considerably among the developing countries (Figure 4.17). Non-OIC developing countries registered the highest coverage, with 74 per cent of households consuming adequately iodized salt. In contrast, only 59 per cent of households were consuming adequately iodized salt in OIC countries. Consumption of adequately iodized salt remained more or less the similar across the OIC regions except ECA, where 65 per cent of households were consuming adequately iodized salt in 2014.

Figure 4.17: Coverage of Vitamin (2009-2013*) and Iodized Salt (2014)

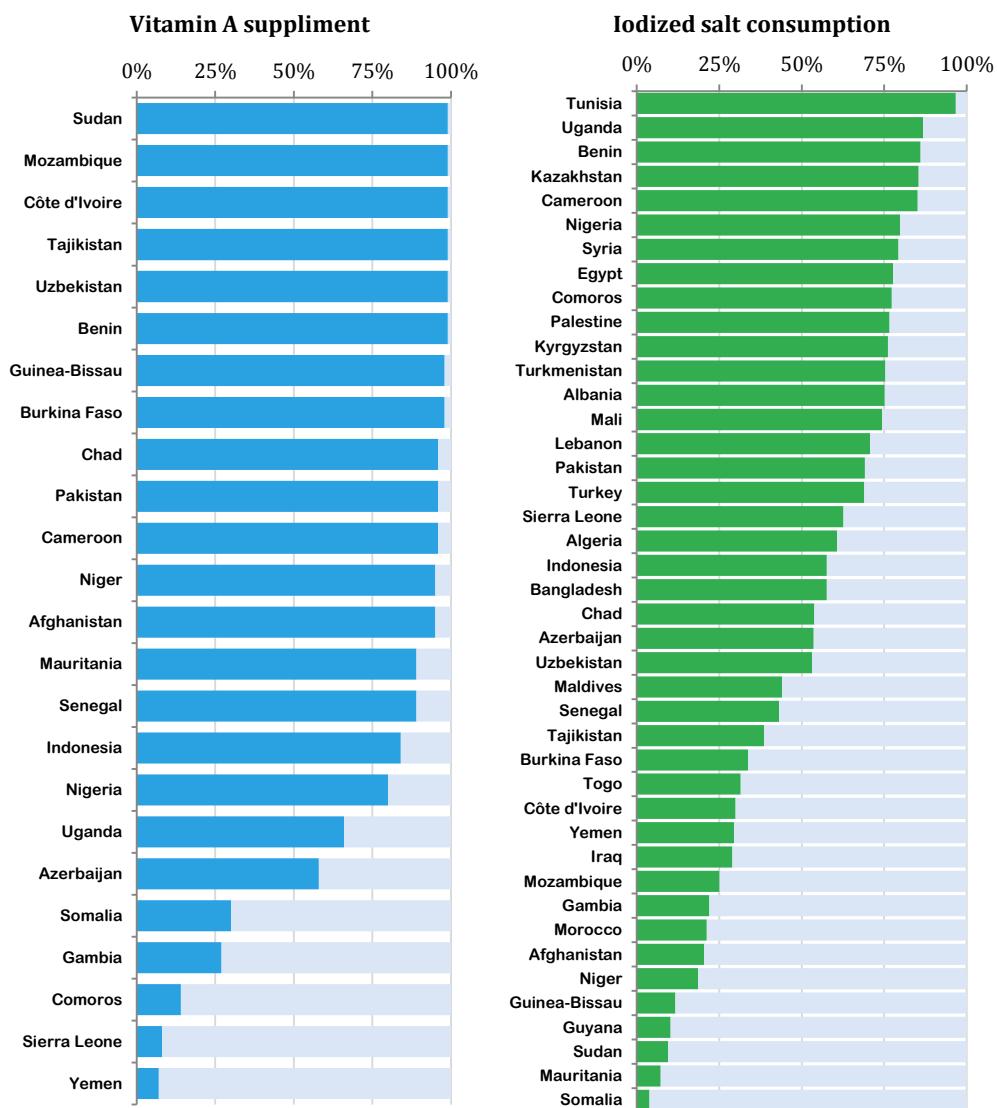
Source: SESRIC staff calculations based on UNICEF Data.* Most recent year available

At the individual country level, 20 out of 27 OIC countries, for which the data are available, had reached the universal target of 80 per cent coverage for vitamin A supplementation. Among these 20 countries, coverage remained over 90 per cent in 17 OIC countries, 12 of them from SSA region (Figure 4.18). For the adequately iodized salt consumption, among the 43 OIC countries for which the data are available, only Tunisia managed to reach the global target of 90 per cent coverage. Among others, consumption of iodized salt ranged from 50 to 88 per cent in 23 OIC countries. For 14 of these countries coverage remained over 70 per cent. On the bottom side, less than 30 per cent of households were consuming adequately iodized salt in 11 OIC countries. Among these countries, coverage remained even less than 15 per cent in Somalia, Mauritania, Sudan, Guyana and Guinea-Bissau.

4.7.3 Iron Deficiency Anaemia

Iron deficiency is one of the most common and wide spread nutritional disorders in the world. However, it is mostly prevalent among children and women in low income developing countries, though it is the only nutrient deficiency which is also significantly prevalent in developed countries as well. Iron deficiency is indicated as the most common cause of anaemia in women and children. During pregnancy, iron deficiency can be harmful to mother and child, resulting in birth complications, increased risk of maternal mortality and impaired physical and mental development of child (UNICEF, 2004).

Figure 4.18: Coverage of Supplements in OIC Countries

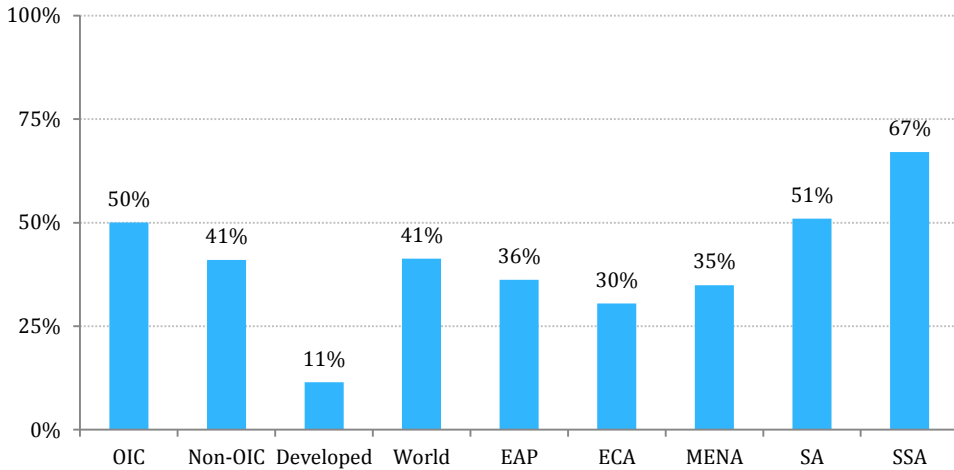


Source: UNICEF Data

According to the latest estimates, over 41 per cent of children under the age 5 were anaemic in 2016. While prevalence of anaemia was just 11 per cent for developed countries, the numbers were staggering in non-OIC developing and OIC countries with 41 per cent and 50 per cent of children suffering from anaemia, respectively (Figure 4.19). Among the OIC region, anaemia in children remained a major health challenge in Sub-Saharan Africa and South Asia. These two regions accounted for over 70 per cent of total anaemic children in OIC countries. As shown in Figure 4.19, about 67 per cent of children were suffering from anaemia in SSA and 51 per

cent in SA region. In contrast, less than 40 per cent of children were anaemic in other regions.

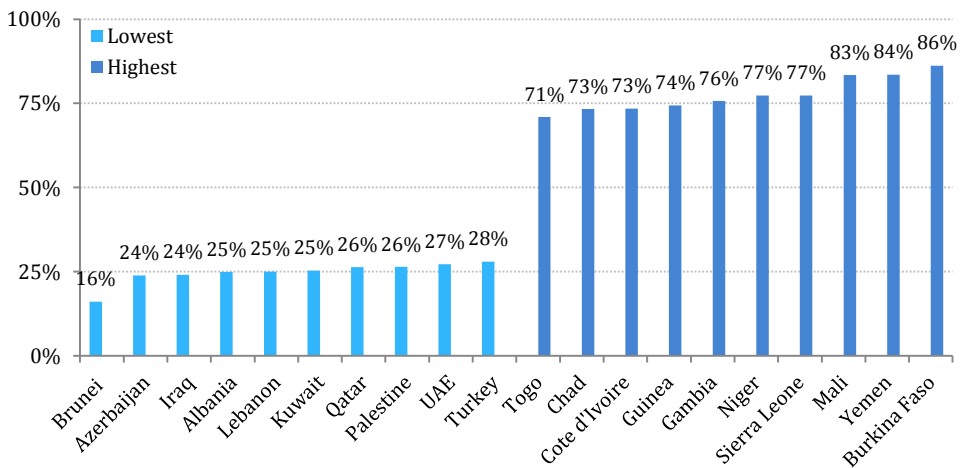
Figure 4.19: Prevalence of Iron Deficiency Anemia, 2016



Source: SESRIC staff calculations based on World Bank, WDI

Looking at the individual countries, as shown in Figure 4.20, Brunei recorded the lowest prevalence of anaemia among children (16 per cent) followed by Azerbaijan (24 per cent) and Iraq (24 per cent). On the opposite side of the scale, prevalence remained highest in Burkina Faso (86 per cent) followed by Yemen (84 per cent) and Mali (83 per cent). In general, more than half of the children were anaemic in 22 OIC countries, 20 of them from SSA region.

Figure 4.20: OIC Countries with Highest and Lowest Anemia Prevalence, 2016



Source: World Bank, WDI

MEDICINES, VACCINES AND MEDICAL TECHNOLOGIES

5

The role of medicines, vaccines and medical technologies in supporting the development of healthy societies is of paramount importance. More precisely, the pharmaceutical industry constitutes one of the essential elements of an effective and well-functioning healthcare system. Pharmaceutical products, such as medicines and vaccines, are fundamental and require appropriate financing. Medical devices are also important to provide health care and to improve the health of individuals and populations. One of the WHO's strategic objectives is to ensure improved access, quality and use of medical devices.

In the view of the above, this section describes the current situation of medicines, vaccines as well as medical technology in OIC countries.

5.1 Pharmaceutical Industry

Today pharmaceuticals have become an indispensable part of health care system around the globe. Historically pharmaceuticals have played a vital role in the human development by improving the quality of life and reducing the time spent in the hospitals. Thanks to innovative pharmaceutical industry that almost all epidemics and chronic diseases are curable today. Due to its direct link with the welfare and wellbeing of human beings, pharmaceutical industry is of strategic importance for the development of a healthy and productive nation. Pharmaceutical industry is considered to be one of the largest and rapidly growing global industries. It is a major source of employment generation and foreign exchange earnings for many countries around the globe.

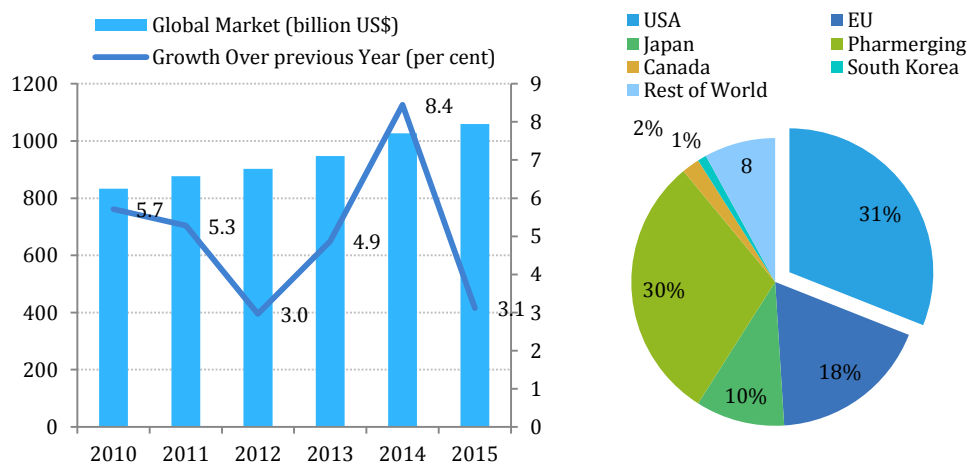
However, despite all these extraordinary achievements, it's a harsh reality that annually more than 2.3 million people die across the world (WHO, 2011), mostly in low income developing countries, due to unavailability and inaccessibility of necessary medicines. Many developing countries, including some OIC members, has insufficient or no manufacturing capacities in the pharmaceutical industry. Local industry covers a tiny fraction of domestic pharmaceutical demand and they rely heavily on imports and medicinal aid. In addition, the share of medicines in "out-of-pocket" health payments (i.e. paid by the patient) is ranging between 40 to 60 per cent in these countries. Consequently, medicines are neither available nor accessible to a large fraction of population and hundreds and thousands of people die of

preventable and treatable diseases. This section attempts to investigate the availability of medicines in OIC countries by focusing on the production, consumption and trade patterns of pharmaceuticals in these countries in the period 2010-2014.

5.1.1 Global Production and Consumption

The global pharmaceutical industry has shown rapid growth over the years and emerged as one of the fastest growing industries in the world. However, world pharmaceutical production and consumption is dispersed unevenly around the world. Developed countries are both leading producers and consumers of pharmaceuticals. According to IMS Health (an international consulting and data services company), in 2015, world pharmaceutical market was valued at US\$ 1.1 trillion. The volume of pharmaceutical industry has surged from US\$ 875 billion in 2010 to US\$ 1.1 trillion in 2015, corresponding to an increase of 21 per cent. During this period, the industry's growth rate has witnessed a declining trend from 5.7 per cent in 2010 to 3.0 per cent in 2012. This decline is mainly associated with the slowdown in economic activity, especially in the developed countries which consume a large chunk of global pharmaceutical products. Since 2008, economic slowdown in developed countries culminated into one of the worst global financial and economic crisis since the Great Depression. The negative effects of this meltdown of historic magnitude were felt across the globe and all sectors were hard hit. The pharmaceutical industry has witnessed one of the lowest year-on-year growth rates of 3.1 per cent in 2015 (Figure 5.1).

Figure 5.1: Global Pharmaceutical Market and Regional Distribution



Source: SESRIC staff calculations based on IMS, Global Outlook for Medicines 2014/2016

Total global spending on pharmaceutical products is estimated to reach US\$ 1.3 trillion in 2020, an increase of US\$340 billion from 2015, driven by population growth, an aging population, and improved access in pharmerging markets (IMS,

2016). Global pharmaceutical market, both in terms of production and consumption, is highly concentrated in the developed regions. In 2015, USA accounted for the highest share (31 per cent) of global spending, followed by pharmerging markets (30 per cent) and Europe (excluding pharmerging European countries) (18 per cent). Pharmerging markets include China, Brazil, India, Russia, Mexico, Turkey, Poland, Venezuela, Argentina, Indonesia, South Africa, Thailand, Romania, Egypt, Ukraine, Pakistan and Vietnam. While rest of the world, mostly developing regions, accounted for only 8 per cent of global pharmaceutical consumption.

5.1.2 Production and Consumption in OIC Countries

Like many other developing countries, the OIC member countries are facing many socio-economic challenges including the establishment of an efficient and effective health care system. In these countries, health sector is still suffering from many problems ranging from poor infrastructure to insufficient number of medical staff. However the shortage of and inaccessibility to necessary medicines are among the most challenging problems. Due to the unavailability of the relevant data on most of the OIC countries, comprehensive analysis on production capacity of pharmaceutical industry at the OIC level is not possible. However, an overview of pharmaceutical industry in the OIC countries, for which the data are available, in terms of their geographical regions is given in the following section.

Middle East and North Africa (MENA)

Economic development is changing the health profile in the MENA region, with the increasing prevalence of communicable diseases. In this context, international companies recognize the value and potential of the MENA region. For example, Sanofi is the largest pharmaceutical company in Morocco, whilst GlaxoSmithKline is the leader in Saudi Arabia. Moreover, some local producers such as Hikma from Jordan and SPIMACO from Saudi Arabia aim to become regional leaders. Pharmaceutical sales in the MENA region are expected to amount to US\$ 35.8 billion at retail prices in 2016, including pharmacy and hospital sales. Turkey, Egypt and Saudi Arabia are the main players in the MENA region.

Egypt will be the second leading pharmaceutical market in the MENA region in 2016. The Egyptian pharmaceutical market increased by nearly five times between 1995 and 2010. However, per capita consumption is still low. In spite of recent production problems, production is expected to rise as the healthcare system continues its transition towards modernization. Egypt is becoming a very attractive market for multinational pharmaceutical companies among pharmerging markets.

Jordan has a relatively strong level of domestic production. However, the majority is exported which results in a market dependent on imports. Most imported pharmaceuticals are retail medicaments from countries located in Western Europe,

such as Switzerland and Germany. On the other hand, exports are primarily semi-finished and retail medicaments destined for other countries in the MENA region. The largest pharmaceutical company in Jordan is Hikma Pharmaceuticals, with a market share of over 10 per cent. The company has a number of manufacturing facilities in Jordan, as well as R&D facilities. In 2010, Hikma acquired an injectable business from a US company that significantly enhanced the scope of the company's injectable business worldwide. Hikma also acquired an Algerian company as well as a Tunisian company in 2010, strengthening its presence in the MENA region.

Although the Moroccan pharmaceutical market is small in global terms, per capita spending on pharmaceutical products is comparatively high for an African country. Over 50 per cent of the pharmaceutical companies are owned by foreign interests, accounting for more than half of industry turnover. Multinationals with a strong presence in the Moroccan pharmaceutical market include Sanofi, GlaxoSmithKline and Pfizer. Hikma has also increased its market penetration, following the acquisition of 63.9 per cent of Promopharm.

The Saudi pharmaceutical market is the richest in the Gulf region. The private pharmacy sector tends to favor branded pharmaceuticals but it is marked by tight price controls. The leading companies operating in the sector are GlaxoSmithKline and SPIMACO. The public sector, more generic-led, is dependent on oil revenues and is characterized by cost-containment and late payments for tenders. There is little domestic production in Saudi Arabia, therefore the vast majority of the market is provided by imports. There are only a few major domestic manufacturers in the country. Locally made pharmaceuticals supply only around 15 per cent of the market, and the rest of the output is mainly exported to other GCC. Moreover, the pharmaceutical industry has grown from US\$ 410 million to US\$ 670 million between 2008 and 2012.

Asia

In the Central Asian region, Turkey emerged as a promising pharmaceutical market. Today, Turkey is the largest pharmaceuticals producer in the group of OIC countries and is ranked 16th among the world's 35 leading producers. There are 134 pharmaceutical companies operating in Turkey and domestic industry meets 90 per cent of local demand. In 2013, Pharmaceutical sales of Turkey amounted to US\$ 14.3 billion compared to US\$ 12.2 billion in 2008. Turkish pharmaceutical industry and market has great growth potential and is placed in a group of countries called "Pharmerging Markets" which represents fastest growing pharmaceutical markets in the world. The pharmerging markets are 21 countries identified by IMS Health as having more than US\$1 billion in pharmaceutical spending growth from 2012 to 2016 and a per capital GDP of less than US\$25,000. Among these pharmerging markets, Turkey, Indonesia, Egypt, and Pakistan are OIC countries.

In the Asia Pacific, Malaysia is one of the fastest growing pharmaceutical markets valued around US\$ 1.6 billion in 2012. According to Malaysian Drug Control Authority, in 2012 there were 235 registered pharmaceutical companies in the country and local manufacturer produced about 25-30 per cent of domestic demand. Provided the rich natural resources (flora and fauna), Malaysia is envisaged as an important bio generic (herbal medicines and vitamins) market in the region. Indonesia is another growing pharmaceutical market in the region estimated at US\$ 4.5 billion in 2012. According to Drug and Food Control Agency (BPOM), Indonesia has a strong pharmaceutical manufacturing industry based on 108 companies. In 2012, local companies accounted for 75 per cent of sales of medicines in the country.

Sub-Saharan Africa (SSA)

The region of SSA accounts for 25 per cent of global burden of disease and represents less than 1 per cent of global health expenditures. Currently, patients are financing 50 per cent of SSA's total health expenditures. According to the World Health Survey 2003, the average share of medicines in out-of-pocket health payments in SSA (14 countries) is 37 per cent, while at country level, this share varies from 11 per cent in Chad to 62.2 per cent in Burkina Faso. In 2012, pharmaceutical market in SSA was valued at US\$ 23 billion with a share of 2.3 per cent of US\$ 965 billion global market. In SSA, 37 out of 44 countries have some pharmaceutical production and local manufacturer account for 25-30 per cent of SSA local demand. However, pharmaceutical production is highly concentrated among a few countries. South Africa's pharmaceutical market is one of the most attractive markets in Africa. Some of the main reasons for its rapid growth are the availability of cost-effective and skilled labor, high quality infrastructure, and the introduction of the South African Health Products Regulatory Authority (SAHPRA). Nigeria was the second leading producer with a share of 6 per cent (i.e. US \$ 1.4 billion). Among other OIC countries, Morocco produced US\$ 1.2 billion and Tunisia produced US\$ 0.8 billion worth of medicines in 2012.

5.1.3 Availability of Essential and Generic Medicines

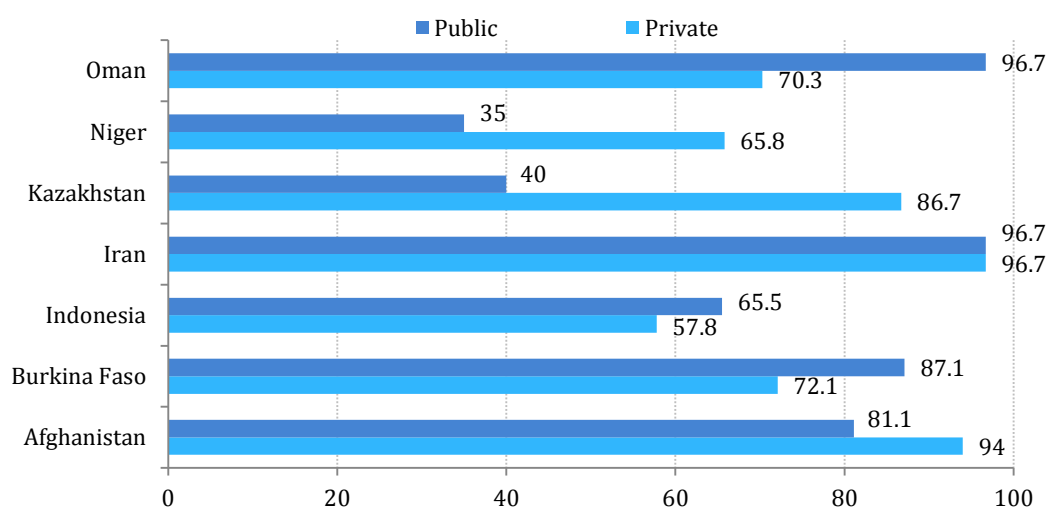
Target 8.E of the Millennium Development Goals acknowledges the need to improve the availability of affordable medicines in developing countries. Several countries have made progress towards increasing access to essential medicines. However, access to essential medicines in developing countries is not adequate. In countries for which the data is available, essential medicines are available in only 57 per cent of public and 65 per cent of private health facilities in 2012. Prices of medicines are about 3.3 to 5.7 times the international reference prices (UN, 2013).

In OIC countries, for which the relevant data are available, the median availability of selected generic medicines for public sector health ranged between 35 per cent and 96.7 per cent (with an overall average of 71.9 per cent) (Figure 5.2). Similarly, for the

private health sector, OIC countries represented a heterogeneous structure, with the median availability ranging from 57.8 per cent to 96.7 per cent (with an overall average of 77.6 per cent). Iran has the highest median availability rate of selected generic medicines with 96.7 per cent in the public and private sector. However, availability was low in a number of OIC countries. For example, Niger has the lowest availability rate with 35 per cent in the public sector and Indonesia has the lowest availability rate with 57.8 per cent in the private sector.

Medicines are crucial ingredient for the safe and effective prevention and treatment of illness and diseases. It is, therefore, essential to have an easy and a timely access to them. Medicines must be accessible in acceptable quantities however, as mentioned above; this is not the case in most OIC countries (SESRIC, 2014). The availability of essential medicines in the public sector is limited due to insufficient resources and inefficient distribution and procurement. Therefore, private sector becomes the main provider of the medicine for the patient. However, they charge more. During the period 2003-2009, and due to higher manufacturers' prices, high mark-ups, taxes and tariffs, the median consumer price ratio of selected generic medicines in private sector was three times more than the price ratio in public sector in the OIC countries (SESRIC, 2014).

Figure 5.2: Median Availability of Generic Medicines (per cent), 2007-2013



Source: WHO, Data Repository

Pharmacovigilance is defined as the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problem. In OIC countries, pharmacovigilance is weak in detecting, investigating and reporting adverse events following medication and immunization. Efficient systems for quality assurance and surveillance do not exist in many

countries and sale of counterfeit medicines is a major problem. Over 90 per cent of medical products are imported (SESRIC, 2014).

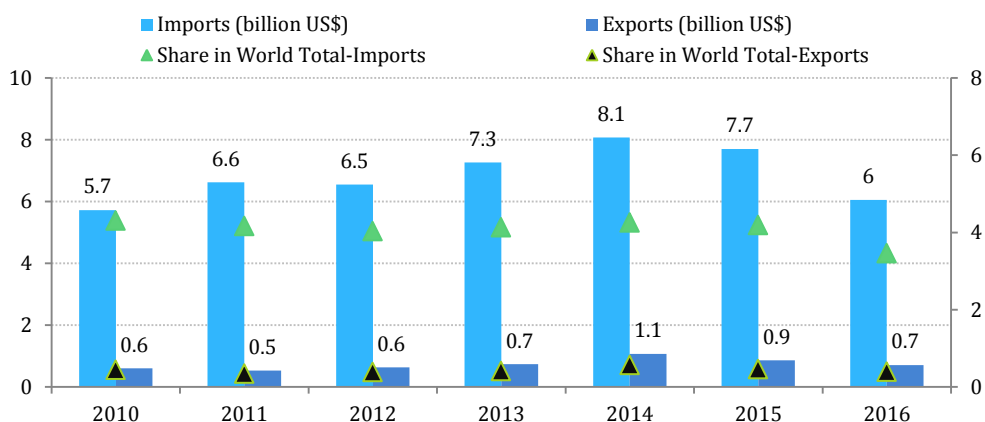
5.1.4 Pharmaceutical Trade

This section analyzes the OIC countries pharmaceutical exports and imports as well as intra-OIC pharmaceutical trade by using the UN Comtrade Database at the 3-digit level of "medicinal and pharmaceutical products, other than medicament of 542" (SITC group 541).

Global pharmaceutical trade has shown an upward trend during the period 2010-2014. Global pharmaceutical trade has shown an upward trend during the period 2010-2016. Global pharmaceutical exports were valued at US\$ 179 billion while pharmaceutical imports were valued at US\$ 174 billion in 2016. However, like the production, pharmaceutical trade also remained highly concentrated in developed countries that accounted for about 61 per cent of world exports and absorbed nearly 57 per cent of pharmaceutical imports in 2014. As a group, developed countries are net exporters of pharmaceutical products while developing countries are net importers.

Being a substantial part of the developing countries, majority of the OIC countries is net importer of pharmaceuticals and their share in global pharmaceutical trade remained very low. As shown in Figure 5.3, OIC pharmaceutical exports witnessed an increasing trend during the period 2010-2016. In 2016, OIC pharmaceutical exports valued at US\$ 0.7 billion compared to US\$ 0.6 billion in 2010, corresponding to an increase of 17 per cent. During the period in consideration, on average, OIC countries as a group accounted for about 4 per cent of developing countries and about 0.4 per cent of world total pharmaceutical exports. In general, OIC Pharmaceutical exports remained highly concentrated in Middle East & North Africa (MENA) and Sub-Saharan Africa (SSA), which accounted for 65 per cent and 18 per cent of OIC total exports respectively in 2016.

Provided the weak production capacity and limited technological know-how, majority of member countries are unable to locally produce sufficient amount of pharmaceuticals needed to meet their domestic needs. As a result, they have to import from other countries. OIC pharmaceutical imports have witnessed an upward trend and increased from US\$ 5.7 billion in 2010 to US\$ 8.1 billion in 2015 before decreasing to US\$ 6.0 billion in 2016. Compared to the pharmaceutical exports, OIC share in developing countries and world total pharmaceutical imports remained much higher. On average, member countries accounted for 14 per cent of developing countries total and 4 per cent of world total pharmaceutical imports during 2010-2016. OIC Pharmaceutical imports also remained highly concentrated in MENA and SSA, which accounted for 52 per cent and 17 per cent of OIC total imports respectively in 2016.

Figure 5.3: OIC Pharmaceutical Trade


Source: SESRIC staff calculations based on COMTRADE Online Database

Pharmaceutical exports of OIC countries are highly concentrated in few of them where only 10 OIC countries accounted for more than 95 per cent of the total OIC pharmaceutical exports in 2016 (Table 1). Turkey remained the top OIC pharmaceutical exporter with exports of US\$ 269 million, which constituted 38 per cent of OIC total pharmaceutical exports in 2016. Among the top ten OIC exporters, first five member countries namely Turkey, Malaysia, Indonesia, Egypt and United Arab Emirates accounted for 87 per cent of OIC total pharmaceutical exports in 2016.

Table 5.1: OIC Top-10 Pharmaceutical Exporters and Importers, 2016

Rank	Country	Exports (mln US\$)	Share in OIC Total	Rank	Country	Imports (mln US\$)	Share in OIC Total
1	Turkey	269	38.0%	1	Turkey	1808	30.0%
2	Malaysia	174	24.0%	2	Algeria	570	9.0%
3	Indonesia	134	19.0%	3	Indonesia	568	9.0%
4	Egypt	47	3.0%	4	UAE	562	9.0%
5	UAE	20	3.0%	5	Pakistan	507	8.0%
6	Morocco	17	3.0%	6	Egypt	369	7.0%
7	Jordan	16	2.0%	7	Malaysia	368	6.0%
8	Tunisia	9	1.0%	8	Kazakhstan	274	5.0%
9	Pakistan	8	1.0%	9	Morocco	253	4.0%
10	Kazakhstan	5	1.0%	10	Jordan	180	3.0%

Source: SESRIC staff calculations based on COMTRADE Online Database

A similar trend can be observed in case of imports as well. In 2016, top ten importers accounted for more than 90 per cent of OIC pharmaceutical imports (Table 5.1).

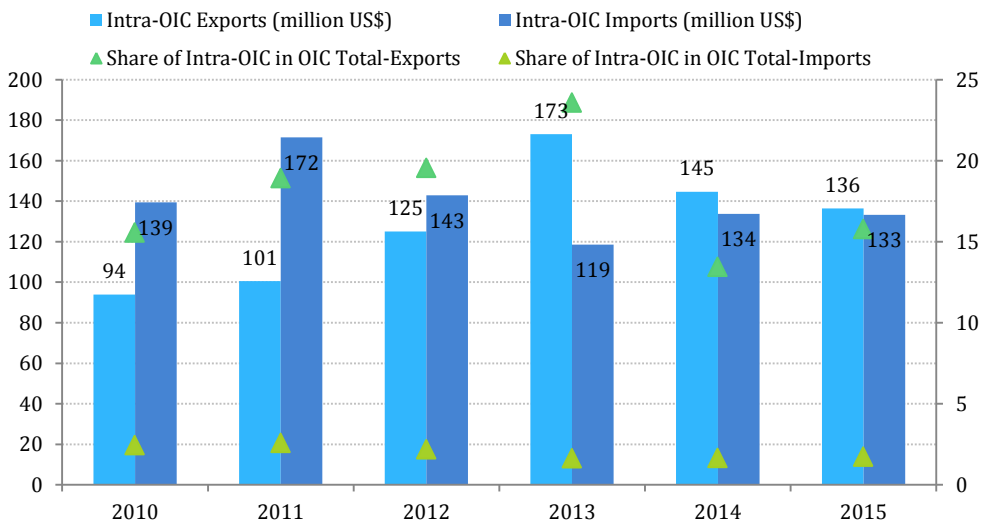
Turkey remained the top pharmaceutical importer with imports of US\$ 1808 million, which constituted 30 per cent of OIC total pharmaceutical imports in 2016. Among the top ten importers, top five importers namely Turkey, Algeria, Indonesia, United Arab Emirates and Malaysia accounted for more than 65 per cent of OIC pharmaceutical imports in 2016.

Intra-OIC Pharmaceutical Trade

At the intra-OIC level, intra-OIC pharmaceutical trade volume decreased from US\$ 233 million in 2010 to US\$ 207 million in 2016. As shown in Figure 5.4, intra-OIC pharmaceutical exports have shown an upward trend during the period 2010-2016 and increased from US\$ 94 million to US\$ 109 million. On average, intra-OIC exports accounted less than half of the OIC total pharmaceutical exports in this period. Intra-OIC pharmaceutical exports remained highly concentrated in few member countries. More than half of pharmaceuticals products in OIC countries have been originated from four member countries, namely Turkey, Malaysia, Indonesia and Jordan and Egypt in 2016.

During the period in consideration, intra-OIC pharmaceutical imports have also fluctuated with a share of 2 per cent of the OIC total pharmaceutical imports. This indicates that many OIC countries rely heavily on non-OIC countries to fulfill their domestic pharmaceutical demand (Figure 5.4). More than half of pharmaceuticals products in OIC countries have been imported by Qatar and Oman in 2016.

Figure 5.4: Intra-OIC Pharmaceutical Trade



Source: SESRIC staff calculations based on COMTRADE Online Database

5.2 Vaccines

The global vaccine industry has been dominated by a few multinational companies. However, companies in China, India and other emerging economies have recently become major vaccine manufacturers and have started selling vaccines on the international markets. For many years, the vaccine sector was characterized by government price controls, a mature product group based on a limited set of technologies. These characteristics constrained the level of investment and the resulting pace of technological innovation. But in recent years, as new vaccines have been introduced to replace older technologies and address new disease areas, the pricing environment has also improved.

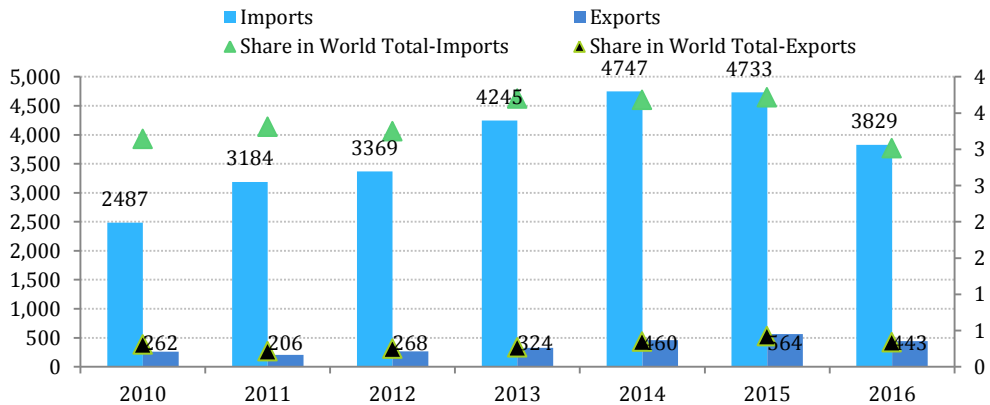
5.2.1 Production

Global vaccine market has increased dramatically over the recent decades from 5 billion US\$ in 2000 to 34 billion US\$ in 2017. It is a rapidly growing market with an annual growth rate of 10-15 per cent. Currently, vaccine market accounts for 2-3 per cent of global pharmaceutical market (WHO, 2013). Globally, vaccine sales are highly concentrated in developed countries which accounts for over 80 per cent of total sales in terms of value. Vaccine manufacturing is considered as a very complex business mainly due to poor returns on investment and high risk in R&D. It is partly due to these factors that despite an increase in vaccine demand, the number of vaccine producing countries has declined from 63 in 1990 to 44 in 2010. Today, emerging developing countries are the major vaccine producers. As of 2013, over 70 per cent of global vaccine demand is met by only three countries namely: China, India and Indonesia (WHO, 2013).

Vaccines production capacity remained very low across OIC countries. According to the latest estimates, only two OIC countries namely: Indonesia and Iran have good manufacturing capacities whereas other vaccine producers like Senegal, Uzbekistan, Bangladesh, Tunisia and Egypt are characterized by low production capacities. Indonesia remained the star performer with 10 per cent share of the global vaccine production and is the third largest vaccine producer after China and India.

5.2.2 Trade

As vaccine production is very limited in OIC countries, they rely heavily on vaccine imports. The UN Comtrade Database at the 4-digit level of "glycosides; glands or other organs and their extracts; antisera, vaccines and similar products" (SITC group 5416) has been used in order to analyze OIC vaccine trade. Between 2010 and 2016, OIC exports of vaccines have shown an upward trend from US\$ 262 million in 2010 to US\$ 443 million in 2016 with a share of 0.3 per cent in world total. Similarly, OIC imports of vaccines increased from US\$ 2.48 billion in 2010 to US\$ 3.8 billion in 2016 (Figure 5.5).

Figure 5.5: OIC Vaccine Trade (US\$ millions)

Source: SESRIC staff calculations based on COMTRADE Online Database

OIC countries display a heterogeneous structure in terms of vaccine procurement. Low income countries, through Global Alliance for Vaccines and Immunizations (GAVI), and high income countries such as Gulf countries have been successful in the uptake of new vaccines. On the contrary, middle income countries have been experiencing financial and operational difficulties with the introduction of new vaccines. Among other factors, lack of sufficient funds and the prevailing high prices of the new vaccines constitute two main obstacles. In addition to delivering vaccinations, national immunization programs are concerned with the quality and safety of immunization through the adoption of safe injection technologies (auto disabled syringes, storage boxes, and incinerators) and proper cold chain and vaccine stock maintenance.

OIC countries are classified in two groups according to the source of the vaccines that are used in their Expanded Programme on Immunization (EPI). First group consists of 31 OIC countries sourcing their vaccines through UNICEF and Global Alliance for Vaccines and Immunizations (GAVI) such as Afghanistan, Bangladesh, Benin, Burkina Faso, Cameroon, Chad, and Comoros. Second group refers to the OIC countries procuring the vaccines directly from manufacturers such as Bahrain, Kuwait, Iran, Iraq, Jordan, Libya, Oman, Palestine and Qatar.

5.3 Medical Technologies

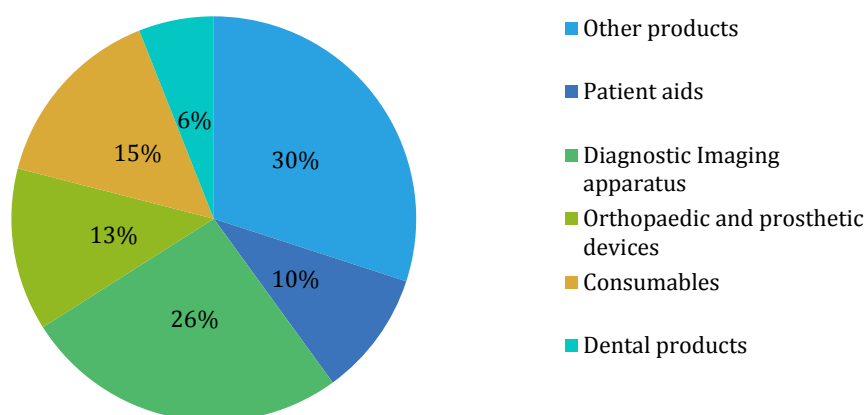
Health technologies, especially those dealing with medical devices, are crucial for the services offered in prevention, diagnosis, and treatment of illness, disease, and disability. Several definitions exist for the term health technologies. According to the Global Initiative on Health Technologies, health technologies refer to the application of organized knowledge and skills in the form of devices, procedures, and systems developed to solve a health problem and improve quality of lives.

This section attempts to present the status of development of health technology programme dedicated to medical devices in global market and OIC countries by using the baseline country survey on medical devices conducted by WHO between 2010 and 2013.

5.3.1 Medical Device Market

Medical devices refer to an article, instrument, apparatus or machine that is used in the prevention, diagnosis or treatment of illness or disease, or for detecting, measuring, restoring, correcting or modifying the structure or function of the body for some health purpose. There are approximately 10,000 types of generic medical device groups available through global markets. As shown in Figure 5.6, diagnostic imaging equipment accounts for the largest proportion (26 per cent) of the global market, other electromedical equipment such as monitors, defibrillators, sterilizers comprise around 30 per cent followed by consumables (15 per cent) and orthopaedic as well as prosthetic devices (13 per cent). In 2014, the global medical devices market was estimated to be worth US\$ 361 billion. With 3 per cent average growth, the global medical devices market will reach \$427 billion in 2018. The "Rest of World" market (all areas outside of the U.S., Europe, and Asia) represents a fifth of the world device market.

Figure 5.6: Global Medical Devices Market



Source: WHO, Global Atlas of Medical Devices, 2013

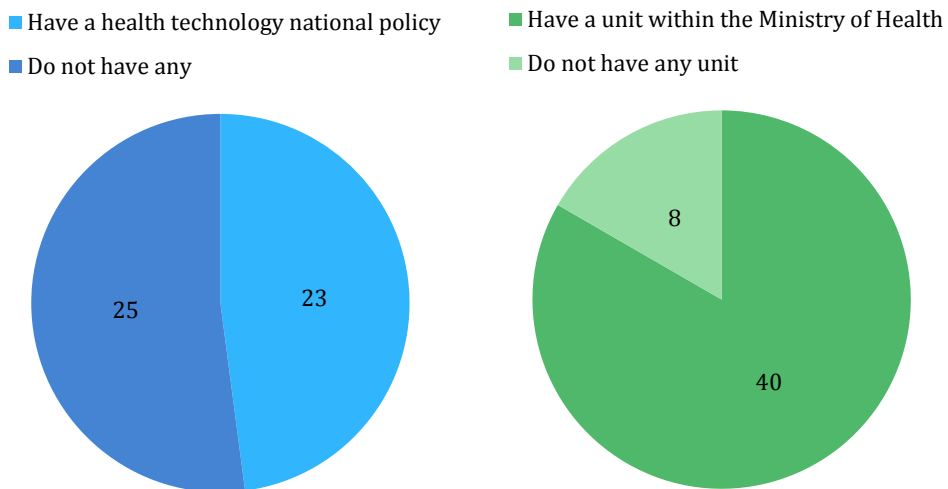
5.3.2 Health Technology Policies

Having a national health technology (medical device) policy can help in guaranteeing the best use of resources according to the needs of the population. In 2013/2014, 23 out of 48 OIC countries (48 per cent) have a health technology national policy. On the other hand, 25 out of 48 OIC countries (52 per cent) do not have any. Such a ratio is highly comparable to the developed countries average of 38 per cent and equal to the world average of 52 per cent. Algeria, Benin, Jordan, Morocco, Oman, Qatar and Saudi

Arabia have a national technology policy but it is not part of the national health program/plan or policy.

Units in the Ministry of Health can perform health technology assessment, planning, acquisition, utilization or other type of medical devices management related tasks. In the period of 2013-2014, 40 out of 48 OIC countries (83 per cent) had a unit within the Ministry of Health. This situation indicates that although many OIC countries have units responsible for the management of medical devices, they do not have national medical device policy, which implies that these units in the Ministry of Health are not efficient (SESRIC, 2014a). In other words, national health planners in many OIC countries should recognize concepts such as health technology assessment and management. Moreover, 8 out of 48 OIC countries such as Bangladesh, Burkina Faso, Chad and Comoros did not have any unit (Figure 5.7).

Figure 5.7: National Health Technology Policy and Unit in MoH, 2013/14

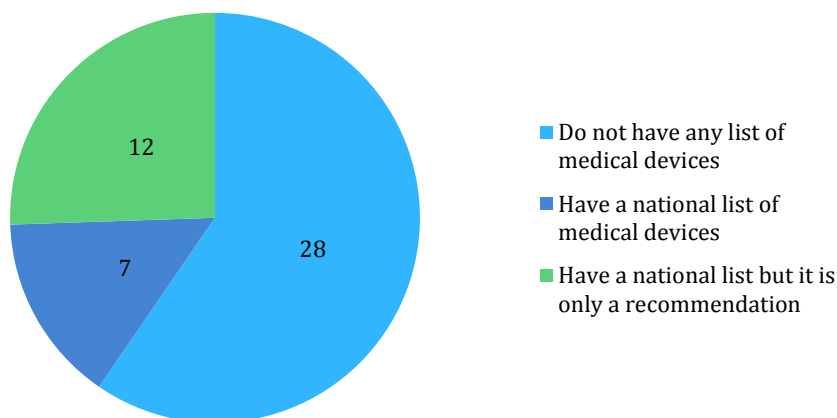


Source: WHO, Data Repository

Lists of Approved Medical Devices

Availability of national list of approved medical devices for procurement or reimbursement is one of the indicators listed in WHO Strategic objective 11 which calls for improved access to safe and effective health care products and technologies. In the period of 2013-2014, 28 out of 47 OIC countries with the available data did not have any national list of approved medical devices of procurement or reimbursement in the country. Jordan, Kyrgyzstan, Mali, Sierra Leone, Tajikistan, Turkey and Uganda had a national list of approved medical devices for procurement or reimbursement in the country. On the other hand, in this period, 12 out of 47 OIC countries had a national list but it was only a recommendation (Figure 5.8).

Figure 5.8: Lists of Medical Devices in OIC Countries, 2013/14

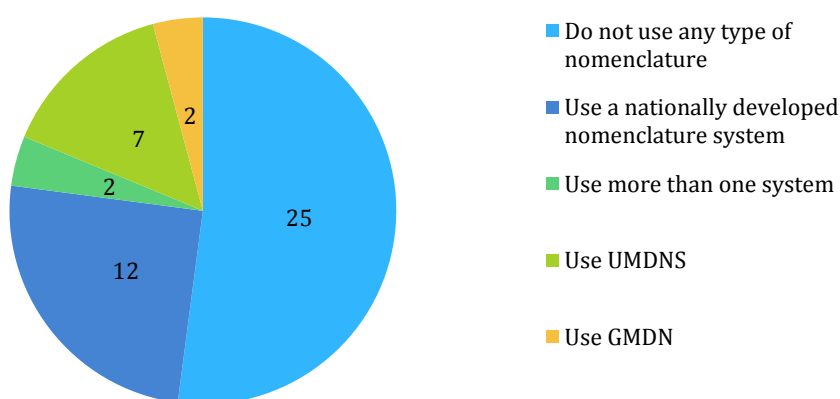


Source: WHO, Data Repository

Official Nomenclature for Medical Devices

Type of nomenclature system for medical devices within the country refers to many nomenclature systems on medical devices that facilitate better classification, regulation and management. The survey data conducted by WHO provides information on the use of these systems and helps determine the need for a nomenclature. In the period of 2013-2014, 25 out of 48 OIC countries did not use any type of nomenclature. However, 12 out of 48 OIC countries such as Albania, Egypt, Kazakhstan, Turkey, Tunisia and Uganda used a nationally developed nomenclature system. Gambia and Indonesia based their nomenclature system on more than one system.

Figure 5.9: Nomenclature for Medical Devices in OIC Countries, 2013



Source: WHO, Data Repository

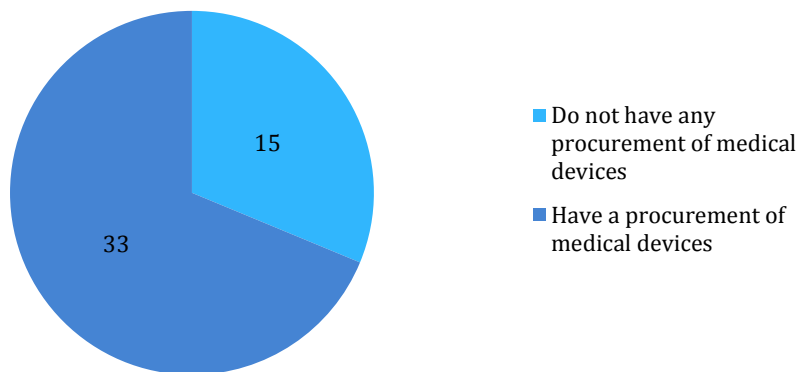
Jordan, Kyrgyzstan, Morocco, Qatar, Sierra Leone, Somalia and Sudan used a nomenclature system based on the Universal Medical Device Nomenclature System (UMDNS). Moreover, Tajikistan and Malaysia used a nomenclature system based on the Global Medical Device Nomenclature (GMDN). On the other hand, only 7 out of 48 OIC countries, namely Albania, Libya, Saudi Arabia, Senegal, Sierra Leone, Sudan and Tajikistan used nomenclature as regulatory, procurement or inventory purposes.

Procurement of Medical Devices

Procurement of medical devices carried out at the national level is the way in which countries procure medical devices either national level or not. It allows countries to develop specific data on procurement. Over-supply of the procured products leads to escalation of delivery costs and inequitable access among the population (WHO/EMRO, 2012). Fifteen, out of 48 OIC countries with data, did not have procurement of medical devices carried out at the national level (Figure 5.10).

Moreover, national guidance is indispensable for resource distribution in a domestic context. National guidelines, policies or recommendations on the procurement of medical devices are important for optimal allocation of medical device resources and the process of medical device procurement. Twenty-two, out of 48 OIC countries with data, did not have any guidelines for the procurement of medical devices.

Figure 5.10: Procurement of Medical Devices in OIC Countries, 2013



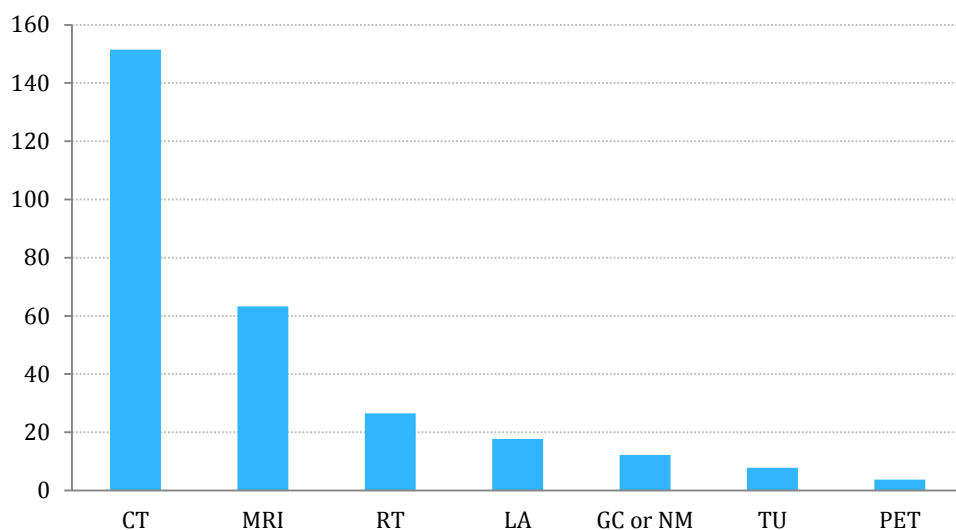
Source: WHO, Data Repository

Availability of Medical Devices

In general, high technology specialized equipment is less available in OIC countries. In the period of 2013-2014, Computed Tomography (CT) scan units from the public and private sectors represented the highest density of medical devices among OIC countries with 144 CT per million populations (Figure 5.11). The density of CT scan units is followed by Magnetic Resonance Imaging (MRI), Radiotherapy units (RT),

Linear Accelerator (LA), Gamma Camera or Nuclear Medicine (GC or NM), Telecobalt Unit (TU), Positron Emission Tomography (PET) with the interval between 4 and 63 units per million populations in OIC countries (Figure 5.11).

Figure 5.11: Density of Medical Devices in OIC Countries (per million people), 2013



Source: WHO, Data Repository

EMERGENCY RISK MANAGEMENT FOR HEALTH

6

Most of the OIC member countries face a wide range of emergencies resulting from various natural hazards and armed conflicts at differing scale, complexity and consequences. These emergencies usually cause extensive political, economic, social and public health impacts, with potentially escalating long-term consequences. Whether they are due to natural disasters, conflicts, disease outbreaks or any other hazards, crises can weaken health systems, damage health infrastructure and annihilate decades of health gains. Effectively preventing, preparing and responding to such emergencies are, therefore, among the most critical challenges facing the OIC countries as well as the international community.

It is estimated that nearly two billion people live in countries where development outcomes are affected by fragility, conflict, and violence (WB, 2017). Violent conflict has spiked dramatically since 2010, and the fragility landscape is becoming more complex. Forced displacement is a developing world crisis, which must be addressed with collective action. An estimated 535 million children live in countries affected by conflict or disaster, often without access to medical care, quality education, proper nutrition and protection (UNICEF, 2016). These people suffer from the consequences of societal disruption and increases in mortality and morbidity due to infectious diseases, acute malnutrition, trauma and complications from chronic diseases.

In 2015, 30 of 50 conflicts recorded worldwide occurred in OIC countries. As a direct outcome, today OIC countries account for 61.5 per cent of all displaced population in the world with more than 25 million displaced people. Syria became the centre of the one of the most serious humanitarian crises of the modern times. Moreover, natural disasters during the last four decades have witnessed a steeper upwards trend inside OIC countries, significantly increasing from around 681 recorded incidents in the 1990s to 1,747 in the 2000-2016 with a rate of increase higher than that of the world average (SESRIC, 2017). These conflicts and disasters have been causing major socio-economic costs for the affected people and countries. Much of the impacts could be avoided if adequate actions were taken to reduce vulnerabilities of the communities.

It is evident that natural disasters and conflicts often significantly affect people's health. Each emergency and its context are different, yet many share similar health

sector vulnerabilities. By integrating common disaster management methods and policies into the health system, resilience of health system and people can be strengthened. It remains challenge to widen the perspectives on emergency and disaster risk management for health from response and recovery to prevention and mitigation, while further improving the local and national capacities for timely and effective response and recovery. Some OIC countries has made progress in managing disaster risks and associated health response, but the capacities of countries remain extremely variable. Weak health and disaster risk management systems, continuing insecurity due to conflict and lack of access to resources and technology are among the major factors affecting the capacities.

In this connection, this section focuses on the emergency health response needs and capacities in OIC countries. It highlights the importance of strengthening health system capacity for emergency management, and then assesses the existing capacities in OIC countries. Given the limited information on health response capacities, a comprehensive assessment could not be provided. This section ends with some brief information on the current health situation in conflict-affected OIC countries.

6.1 Need for Strengthening Health System Capacity

Emergencies of varying types, scales and consequences occur despite a wide range of measures taken to prevent them. When occurred, communities and countries need to be well prepared for the potential human, economic and societal consequences. The greatest vulnerability of any country in an emergency is the health and well-being of its people and communities. Disasters and conflicts can put the continuity and sustainability of health sector services at risk, and destroy many years of health sector development. Those the times when the health services are most needed to minimize the negative consequences. Therefore, it is critical to take specific measures to protect health infrastructure and strengthen health system capacity for emergency management.

Institutional and human capacities are critical in strengthening the resilience of health system and ensuring continuity in the delivery of effective, quality services to all people in all settings. When health systems and health workers are well prepared for emergencies, and to anticipate the health needs of the population, they can respond more promptly and effectively in the event of a crisis. In the 2014-2015 Ebola epidemic in West Africa, many health workers died and already fragile health systems were weakened, which resulted in increased maternal, infant and child deaths (EWEC, 2015). Therefore, health system emergency preparedness is critical to protect health workers, provide essential health services and improve health outcomes in all settings.

In this context, the International Health Regulations (IHR) adopted by WHO member states in 2005 require that all countries have the ability to detect, assess, report and respond to potential public health emergencies of international concern at all levels of government, and to report such events rapidly to the WHO to determine whether a coordinated, global response is required. Epidemics in the past decade in Africa, including some OIC countries, have pointed to the importance of implementing the IHR, and to strengthening the health system and its interaction from local to national level in effective responses

A common, efficient, coordinated multisectoral approach, comprising all-hazard and hazard-specific measures, is needed to ensure preparedness for all types of emergencies, including local and national outbreaks of infectious diseases; epidemics and pandemics; and other types of emergencies caused by natural, technological and societal hazards that can have a significant impact on health outcomes. Table 6.1 provides the descriptions of different types of health-related emergencies. In order to ensure a timely, efficient and effective response to such events, it is important to strengthen country and community emergency preparedness.

Recently, WHO prepared a Strategic Framework for Emergency Preparedness (SFEP) which identifies the principles and elements of effective country health emergency preparedness. It advocates for prioritizing financial and other resources for emergency preparedness at community and country levels, and for mobilizing and sustaining increased domestic and international investment (WHO, 2017a). Therefore, it can be useful in prioritizing and implementing important emergency preparedness actions while strengthening intersectoral collaboration with other government sectors, the private sector and civil society.

Table 6.1: Different Types of Emergencies

Major Groups	Groups	Sub-Groups	Examples	Features & Actions
Emergencies due to natural hazards	Biological hazards	<i>Local and national outbreaks</i>	Ebola, meningitis and many other communicable diseases	Their management depends largely on the ability of national and local health systems to detect them and to respond rapidly and competently.
		<i>Outbreaks due to pathogens with pandemic potential</i>	MERS CoV and avian A(H5N1) influenza	These are potentially highly transmissible pathogens among humans and which have been detected in numerous countries, but which have not yet reached pandemic status. Fundamentally different actions may be needed.
		<i>Pandemics</i>	A(H1N1) influenza	Typically requires a substantive response. There is a need to reduce transmission and manage the response with limited access to vaccinations, drugs and other forms of assistance.
	Hydro-meteorological and geophysical hazards	-	Floods, drought and earthquakes	Natural disasters result in direct and indirect effects on health and disruption of societal and health systems (and the further possibility of outbreaks), require multi-sectoral and health sector preparedness.
Emergencies due to human-induced hazards	Technological hazards	-	Industrial pollution, nuclear radiation, toxic waste, fires and chemical spills	These may cause localised effects or result in widespread regional or global phenomena.
	Societal hazards	-	Armed conflicts, terrorism, deliberate use of chemical, biological, radiological and nuclear agents	Armed conflicts can cause great morbidity and loss of life and disruption to basic services including health that can last for many years, even decades. Substantial international assistance is usually needed.

Source: Compiled from WHO (2017a).

The SFEP identifies twelve core components that represent distinct areas of work. These include components associated with the strengthening of the following areas. Common elements for strengthening preparedness, and information on their application at community, local, subnational, national, regional and global levels, can be found in WHO (2017a).

(i) Governance

1. National policies and legislation that integrate emergency preparedness
2. Plans for emergency preparedness, response and recovery
3. Coordination mechanisms

(ii) Capacities

1. Assessments of risks and capacities to determine priorities for emergency preparedness
2. Surveillance and early warning, information management
3. Access to diagnostic services during emergencies
4. Basic and safe health and emergency services
5. Risk communications
6. Research development and evaluations to inform and accelerate emergency preparedness

(iii) Resources

1. Financial resources for emergency preparedness and contingency funding for response
2. Logistics mechanisms and essential supplies for health
3. Dedicated, trained and equipped human resources for emergencies

Emergency preparedness is a shared responsibility that requires coordination between communities and national and international actors. It also necessitates effective partnerships between public and private actors, civil society, donors and technical agencies. Therefore, ensuring health security relies on coordinated multisectoral action and investment to build consolidated emergency preparedness. When prepared, responses are more timely and effective, and the human, economic and societal consequences of emergencies can be significantly limited. Achieving emergency preparedness has a cost, but this is an investment in health, safety, security and development. Health emergencies caused by natural disasters, conflicts and the cross-border spread of infectious diseases have increased recognition of the profound effects of emergencies on development.

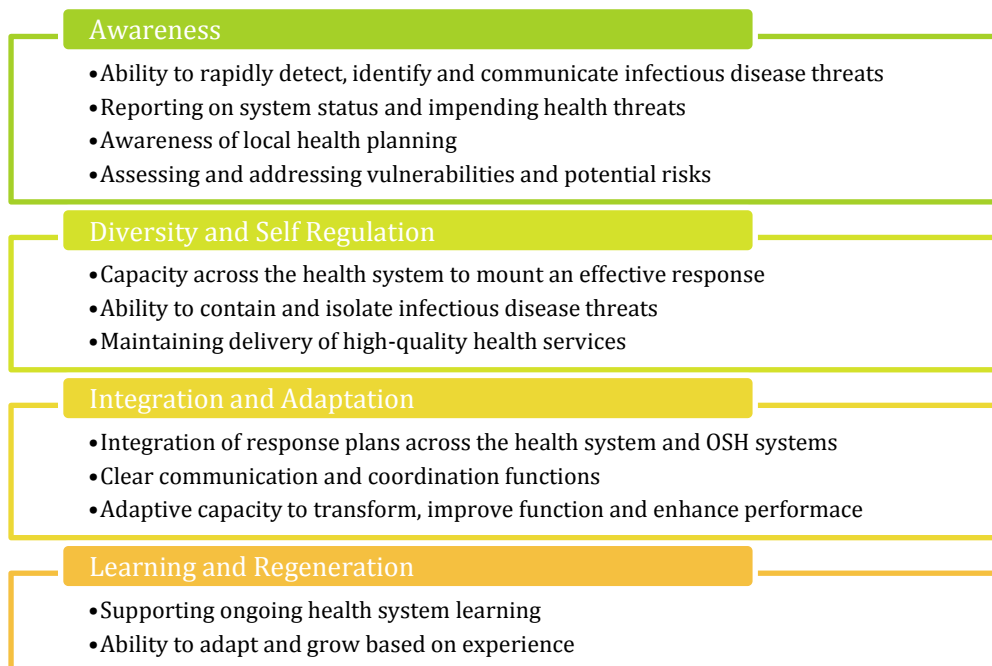
Emergency and disaster risk management for health (EDRMH) requires systematic assessment of risks to public health posed by hazards; prevention and mitigation of those risks; preparation for emergencies with comprehensive, multisectoral plans with appropriate legislation and supportive policy, and capacity building;

quick and effective response in the event of a disaster; planning for post-disaster recovery (WHO, 2017b). If an effective EDRMH would be in place, many of the deaths, injuries, diseases, disabilities, psychosocial problems and other health impacts could be avoided or reduced significantly. However, every new threat reveals the persisting challenges in managing health risks in times of emergencies and disasters. Many countries could reduce vulnerability and protect health facilities by strengthening resilience of health systems at community level.

Health system resilience can be defined as the capacity of health actors, institutions, and populations to prepare for and effectively respond to crises; maintain core functions when a crisis hits; and, informed by lessons learned during the crisis, reorganise if conditions require it. Health systems are resilient if they protect human life and produce good health outcomes for all during a crisis and in its aftermath (Kruk et al., 2015).

There are four characteristics of a resilient health system (Figure 6.1). First one is awareness. Resilient health systems should be able to rapidly detect, identify and communicate infectious disease threats. It should also be able to assess and address vulnerabilities and potential risks. Second is diversity and self-regulation. They should have the capacity to contain and isolate a broad range of infectious disease threats. They are also self-regulating, with the ability to contain and isolate health threats while delivering core health services and avoiding propagating instability throughout the system.

Third, they need to be integrated and adaptive. Resilient health systems bring together diverse actors, ideas, and groups to formulate solutions and initiate action. Resilient health systems are also adaptive. Accordingly, they are able to transform in ways that improve function in the face of highly adverse conditions. Finally, there is always room for improvement. It is vitally important that the health system continues to learn, adapt and evolve in order to be highly proactive, responsive and well-functioning.

Figure 6.1: Characteristics of Health System Resilience

Source: Compiled from Kruk et al. (2015) and Ontario (2016)

In order to develop adaptable and resilient healthcare systems, flexibility and stability of services are critical. The systems should be ready to cope with large number of patients and deliver different functions at a time. There must be plans for the continuity of health services with priority services identified and response coordination mechanism well-designed. Moreover, multisectoral action plan should be prepared to protect affected people in wider determinants of health such as water, sanitation, nutrition and security. To ensure the continuity of health services, essential infrastructure such as communications, logistics, energy and water supplies also need to be protected through multisectoral coordination.

In countries affected by crises, limited basic health services and infrastructure massively intensifies the challenges of disaster response. Countries with well-developed health systems are often much more resilient and better prepared for disasters. Primary health care builds community resilience and provides the foundation for responding to emergencies. Community-based actions are also critical in protecting health in emergencies, because they prevent risks at the source by using the local knowledge of local risks and avoiding exposure to local hazards. Therefore, a well-prepared and organized community can reduce the risks and impacts of emergencies and save many lives (WHO, 2013).

During crises, resilient health systems will reduce loss of life and mitigate adverse health consequences by providing effective care for emergency and routine health needs. Resilient health systems can also minimise social and economic disruption that characterise outbreaks and other large-scale health threats. A major concern after crisis situations is disease outbreak. In general, poverty, urbanization and population displacement have led to concentration of human populations in conditions that favour major outbreaks. The challenge is to strengthen global efforts to detect and contain epidemic disease threats. In order to prevent such outbreaks, a comprehensive alert and response system should be developed with various components including such as surveillance, response and assessment after the event.

6.2 Assessment of Health System Capacities for Emergency Management

Assessment of existing health system capacities is critical for emergency preparedness. The lack of data on available health resources often creates a major gap in decision making during emergencies. Nickerson et al. (2015) suggest that the assessment of the availability and functionality of health services and facilities is technically feasible in emergencies, even under difficult circumstances. In this regard, Health Resources Availability Mapping System of WHO helps to promote and support good practice in mapping health resources and services availability in emergencies so as to strengthen informed based decision making by the Health Cluster. It aims to ensure that assessment and monitoring of health resources and services availability can be conducted systematically and quickly despite limited time, resources and accessibility.

In this regards, several assessment tools and mechanisms are developed to evaluate the preparedness of health systems for emergencies. There are also various response mechanisms in different countries, where national red cross and Red Crescent societies taking great responsibilities. This subsection discusses some elements of emergency health system capacities.

6.2.1 The Emergency Health System Framework

The emergency health system framework, developed by WHO as the conceptual basis used for describing and analysing health systems during emergencies, is composed of six building blocks, 1) leadership and governance, 2) health workforce, 3) medical products, vaccines and technology, 4), health information 5) health financing, and 6) service delivery. The WHO Regional Office for Europe has adopted health system strengthening as the approach to support emergency preparedness and enhancement of crisis management capacities, and developed a practical, action oriented Toolkit based on these six functions, which is further

subcategorized into 16 key components and 51 essential attributes to facilitate a structured and reproducible assessment of the preparedness of health systems.

The final version of the toolkit was published early 2012 on the basis of pilot assessments carried out in around 20 countries including Azerbaijan, Kazakhstan and Turkey. These reports used a standardized assessment method with an all-hazard, multi-sector approach, adopting the WHO health systems' framework as the conceptual basis for describing and analysing the status of health systems preparedness for crises and identifying key recommendations (WHO, 2012). Brief outcomes of these reports were presented in the 2015 edition of the OIC Health Report.

Since assessments on emergency health services are available for only few OIC countries, it would be beneficial for other OIC countries to conduct an evaluation study on their existing capacities and needs, possibly in cooperation with WHO or other professional organizations. Overall, the implementation of any national integrated emergency preparedness programme requires sufficient and well-equipped staff to develop standardized health-sector emergency preparedness plans and to formulate policies on education, training, accreditation and research.

Ministries of health should have some form of institutional arrangement to ensure the development and maintenance of health emergency preparedness and response programmes. An effective emergency response system should include a professional health institution, well-trained health technical personnel, smooth and accurate disease surveillance and report system, modern laboratory, electronic information system that can facilitate quick communication with other departments, adequate supplies of medicine and vaccines, and effective methods to prevent the spread of disease, all of which are essential to emergency control (APEC, 2012).

6.2.2 Assessment of Hospital Safety

In many countries, hospitals are the last shelter for disaster victims seeking refuge and the care they desperately need. Hospital systems also represent a major investment – up to 70 per cent of the ministry of health budget – and are an indicator of social well-being. Losing a hospital may result in a loss of security, connectivity and trust in local communities. Yet the evidence shows that health facilities and health workers are among the major casualties of emergencies and other crises. The loss of emergency services during emergencies and disasters severely lessens the possibility of saving lives and reducing other health consequences (WHO, 2015a).

In 2015, WHO published the Comprehensive Safe Hospitals Framework (CSHF) to provide governments and health authorities with a more systematic approach to

strengthening the safety and preparedness of health facilities for all types of hazards. It is to ensure health facilities are safely built to withstand hazards and remain operational in emergencies. In designing new safe hospitals or taking measures to improve the safety of existing hospitals, there are four objectives (WHO, 2015b):

- i. enable hospitals to continue to function and provide appropriate and sustained levels of health-care during and following emergencies and disasters;
- ii. protect health workers, patients and families;
- iii. protect the physical integrity of hospital buildings, equipment and critical hospital systems; and
- iv. make hospitals safe and resilient to future risks, including climate change.

In this connection, the Hospital Safety Index (HSI) has been developed by the Pan American Health Organization (PAHO) and a group of Caribbean and Latin American experts as a tool to gauge the overall level of safety of a hospital or health facility in emergency situations (PAHO, 2015). The HSI not only estimates the operational capacity of a hospital during and after an emergency, but it provides ranges that help authorities determine which hospitals most urgently need actions to improve their safety and functionality. Determining the HSI scores is an innovative way of managing risk in the health sector and OIC countries should join the efforts of measuring safety of health facilities and strengthening them accordingly.

6.2.3 Emergency Health Response Agencies and Regional Initiatives

Across the globe, Red Crescent and Red Cross societies are the main institutions that provide first aid and emergency response as well as epidemic control, programmes in health promotion and prevention, psychosocial care and community empowerment. Hundreds of thousands of volunteers work in these communities to promote health and prevent diseases not only in case of emergencies but also in normal times.

Globally, there are 190 National Red Cross and Red Crescent Societies (NRCS) that are members of the International Federation. 157 of which are Red Cross Societies and 33 are Red Crescent Societies. In OIC countries, there are 33 Red Crescent Societies and 23 Red Cross Societies.² Only Oman does not have a national society that is a member of IFRC.

² Following countries have Red Cross Societies: Albania, Algeria, Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Gabon, Gambia, Guinea, Guinea-Bissau, Guyana, Indonesia, Lebanon, Mali,

These societies and their millions of volunteers provide frontline response when emergencies strike. They provide immediate assistance for the victims and are involved in longer-term activities that save lives and improve health. Due to increasing number of disasters and conflicts, epidemics of infectious diseases cause vast numbers of deaths and disability every year. Outbreaks of infectious disease are more frequent in poor and fragile communities, which make it even harder to contain the disease and provide effective health care. NRCS can greatly contribute to the prevention of disease outbreak and connecting people and communities with the vital help they need.

Although there are vast differences in terms of capacities and capabilities across NRCS in OIC countries, there is no comparable indicator to evaluate the performance of these societies. Therefore, it is important to increase cooperation and partnership among NRCS in OIC countries to share experiences and transfer knowledge and capacities.

At regional level in OIC, the Islamic Committee of the International Crescent (ICIC) has been established as a specialized institution to increase cooperation among national societies in OIC countries and coordinate the humanitarian response. The Eighth Islamic Conference of Foreign Ministers, held in May 1977, at Tripoli-Libya, approved the principle of creation of this institution. It has been launched in 1982 with a secretariat in Benghazi, Libya. According to the information provided in their website, there are currently 18 OIC countries that ratified the ICIC agreement³ and two signatory countries⁴.

This institution is designed to:

- provide relief and assistance in case of disasters;
- provide services and care to victims of armed conflicts and taking peaceful initiatives in order to solve the resulting human problems;
- build up close relations of cooperation with organizations operating in the field of humanitarian services, in particular with the Red Crescent and Red Cross; and
- contribute to the efforts exerted to establish better relations among people, promote solidarity to defend human rights, supporting the call for justice and peace, and preventing the risks of war.

Mozambique, Niger, Nigeria, Senegal, Sierra Leone, Suriname, Togo and Uganda. The remaining OIC countries have Red Crescent Societies.

³ Ratified countries are Libya, Mali, Saudi Arabia, Iran, Syria, Tunisia, Sudan, Jordan, Qatar, United Arab Emirates, Comoros, Yemen, Morocco, Niger, Mauritania, Algeria, Iraq and Djibouti.

⁴ Signatory countries are Turkey and Guinea.

The original plan was to develop humanitarian functions similar to those of the IFRC within the Islamic World, but it could not develop comprehensive programmes to do these functions (Benthall and Bellion-Jourdan). The Centre conducts some activities in the areas of humanitarian assistance, but the total expenditure of the Centre in humanitarian assistance is reported to be around US\$ 800,000.⁵

In addition to NRCS, there are constantly increasing number of civil society organizations that target vulnerable and affected people to address their health and other humanitarian needs during and after emergencies. They play increasingly important role in this area, and with adequate support and facilitation, they can play even greater role in helping people and alleviating their health related deprivations.

6.3 Current Health Sector Situation in Conflict Affected Countries

In 2015, 30 of 50 conflicts recorded worldwide occurred in OIC countries, 12 of which were internal conflicts and 17 were internationalized conflict. As a direct outcome, today OIC countries account for 61.5 per cent of all displaced population in the world with more than 25 million displaced people. More alarmingly, around 80 per cent of all new internal displacement in the world during 2014-15 took place in OIC countries. Moreover, 71 per cent (around 89 million) of people who globally require humanitarian assistance reside in OIC countries.

There are a number of conflict areas around the globe with severe health consequences. Table 6.2 shows the list of countries that are graded 3 and 2 by WHO as well as those that are of concern. 5 out of 7 countries with substantial public health concerns (Grade 3) are OIC countries. In total, 18 out of 31 countries with health concerns are members of OIC. It includes countries with health concerns due to conflicts as well as disease outbreak and some other reasons. This subsection provides some information on current health sector situation in selected conflict affected OIC countries. The main source of information is the WHO report on its 2017 humanitarian response plans (see WHO, 2017b).

⁵ Available at <http://icic-oic.org/en/Activities.htm>; Accessed in September 2017.

Table 6.2: List of Countries with Health Concerns, Crises and Emergencies

	Grade 3 countries	Grade 2 countries	Countries of concern	
OIC Countries (18)	<ul style="list-style-type: none"> ▪ Iraq ▪ Nigeria ▪ Somalia ▪ Syria ▪ Yemen 	<ul style="list-style-type: none"> ▪ Cameroon ▪ Libya ▪ Niger 	<ul style="list-style-type: none"> ▪ Afghanistan ▪ Burkina Faso ▪ Chad ▪ Djibouti ▪ Gambia 	<ul style="list-style-type: none"> ▪ Mali ▪ Mauritania ▪ Palestine ▪ Pakistan ▪ Sudan
Non-OIC Countries (13)	<ul style="list-style-type: none"> ▪ Ethiopia ▪ South Sudan 	<ul style="list-style-type: none"> ▪ Angola ▪ Central Afr. Rep. ▪ DR of Congo ▪ Ecuador ▪ Haiti ▪ Ukraine 	<ul style="list-style-type: none"> ▪ Burundi ▪ Fiji ▪ Guatemala ▪ Myanmar ▪ Zimbabwe 	

Source: <http://www.who.int/hac/crises/en/>, accessed on 06/09/2017. **Note:** Grade 2 and 3 respectively indicate an event with moderate or substantial public health consequences that requires moderate or substantial local and/or international response.

Afghanistan: The continued conflict in Afghanistan is causing an increase in displacement. In 2016, more than 630,000 Afghans were internally displaced due to conflict. Active conflict continues to threaten the physical safety and health of Afghans. Attacks against health facilities, patients, medical staff and vehicles continue to disrupt and deprive people of life-saving treatment. Four and a half million people live in conflict-affected districts with extremely constrained access to health services. Maternal and child health remains dangerously overlooked. Rates of infant and maternal mortality are among the highest in the world and severe acute malnutrition has passed emergency thresholds in 20 of 34 provinces. Around 1.8 million people require treatment for acute malnutrition.

Chad: Food insecurity, population movement and health emergencies are three main aspects of the humanitarian crisis in Chad that contribute to the vulnerability of the population. Women and children are the most vulnerable and there is a widespread lack of access to basic services. Chad currently has 580,000 displaced people. Over four million people are food insecure in Chad with nearly one million expected to be severely food insecure by June 2017. The nutritional situation remains of concern with nearly 438,000 malnutrition cases expected in 2017. Malaria is the main cause of mortality for children less than five years old. There have been 337,000 confirmed malaria cases and 900 deaths have been recorded since January 2016.

Iraq: The humanitarian crisis in Iraq remains one of the largest and most volatile in the world. Over 4 million Iraqis are currently displaced. During the past year, more than 750,000 people in areas impacted by the conflict have been newly displaced. In 2017, this number is expected to increase to as many as 1.2 to 1.5

million additional civilians. Displaced families require comprehensive emergency assistance including shelter, food, water, sanitation, household items, health care, education and specialized protection. The number of health consultations performed in health clinics has increased eightfold and more than half of the secondary and tertiary hospitals in Mosul have been damaged or destroyed. The shortage of safe water for populations trapped inside Mosul remains a concern as this increases the risk of outbreaks of water borne diseases.

Libya: Insecurity and violence across Libya have created unsafe living conditions and damaged critical infrastructure which has placed people at high risk of injury and death, disrupted access to public utilities and services, and driven displacement. Around 1.3 million people have no access to life-saving health care services and resources. Public health facilities have been dramatically impacted. 43 out of 98 hospitals assessed are either partially functional or not functional at all due to an acute shortage of life-saving medicines, medical supplies and equipment along with critical shortages of human resources, particularly specialized nurses, midwives and technicians. These shortages are more pronounced at the primary care level. As a consequence, referral and tertiary hospitals are overloaded with patients seeking help for common illnesses, and are unable to meet the demand.

Mali: Almost half of the over 18 million people in Mali live below the poverty threshold of US\$ 2 per day. Mali has had armed conflict since 2012 and despite the signing of the peace agreement in 2015, armed clashes continue with significant impact on the security of civilians. Insecurity has caused population displacement, limited access to social services including health care, food insecurity and nutritional crisis. The people of Mali are also vulnerable to epidemics, droughts and floods. In 2016, more than 18,000 people were affected by floods. More than 60,000 people may be at risk due to flooding in 2017. Access to health care remains limited overall in the country, particularly in Kidal where 22 of 32 existing health structures are non-functional. This is exacerbated by a shortage of skilled health workers in most parts of the country. Mali continues to be at high risk of outbreaks: in 2016, 500 cases of meningitis were recorded. In addition, humanitarian actors report an increase in the frequency of diarrhoeal disease cases among children related to the consumption of unsafe water, and respiratory infections due to inadequate shelter conditions. Food insecurity continues to be a major problem with 19 per cent of the population experiencing food insecurity, including 485 600 people with severe food insecurity.

Nigeria: The humanitarian crisis in the six states of north-eastern Nigeria has intensified after eight years of violent conflict. The conflict caused widespread forced displacement, acute food and nutrition insecurity and serious human rights violations. Some areas remain inaccessible to humanitarian assistance. Violence caused mass displacement of people to neighbouring countries. There is a high

prevalence of severe malnourishment, morbidity and mortality. Lack of basic shelter, water, latrines and shower facilities increase the risks of communicable diseases, including cholera. This also exacerbates malnutrition among children under five. Water, Sanitation and Hygiene infrastructure must be urgently rehabilitated / rebuilt to minimize waterborne diseases.

Palestine: Palestine remains in the midst of a protracted crisis, now in its fiftieth year. In 2016, an estimated one million people are in need of humanitarian health and nutrition interventions; with 830,000 people in the Gaza Strip and 173,000 in the West Bank. In Gaza, hospitals and primary healthcare clinics struggle with chronic shortages of drugs, disposables and essential equipment, compounded by severe fuel shortages and prolonged electricity cuts. In the West Bank, access restrictions to health services remain a concern for patients and health workers, in particular in access-restricted areas affected by the security wall and checkpoints. Mobile health clinics are an essential lifeline for the affected communities.

Somalia: While conflict and environmental hazards have rendered many of the country's estimated 12.3 million people chronically or acutely vulnerable, 2017 presents the potential for drought to become the main driver of crisis. Continued political instability, forced evictions of internally displaced people (IDPs), ongoing armed conflict, and long-standing environmental stress are some of the drivers of vulnerability in Somalia. The coverage and quality of basic social services in the country remains extremely low. Recurrent drought conditions drive food insecurity, malnutrition and are linked to disease outbreaks. Access to basic and lifesaving health care services remains a challenge that needs to be prioritized. Immunization coverage is considerably low and Acute Watery Diarrhoea/cholera, measles, malaria, and other communicable diseases outbreaks are constantly reported in many areas. The rapid movement of IDPs has overwhelmed health facilities. Delivery of life-saving medicines and medical equipment has been irregular due to insecurity, road inaccessibility, electricity and fuel shortages and rupture of the cold chain. Overcrowding, lack of functioning referral systems, limited access to health services, unsafe water use and hygiene practice, and underlying malnutrition pose major challenges for the control and prevention of disease outbreaks.

Syria: Essential health services remain in critical shortage across the country. Insufficient human resources, supplies, equipment and infrastructure continue to disrupt the functionality of the health system. Over half of the public hospitals and almost half of its public health care centres are either closed or are only partially functioning. A severe shortage in skilled birth attendants and obstetricians means pregnant women lack access to critical childbirth services. One in five Syrians has moderate mental health issues, and 1 in 30 is at risk of developing severe or acute mental health needs. Even though this is an area of growing need, only 20 per cent

of functioning health facilities provide mental health care. Local health networks, connecting different levels of care through referral networks, remain fragmented, presenting a complicated path for patients seeking services. As access to life-saving medications and care is restricted, people with life-threatening, chronic diseases such as diabetes, kidney failure, asthma, epilepsy, cancer and cardiovascular illness are at continued risk of death or developing complications.

Yemen: Almost two years of war have devastated Yemen, leaving 18.8 million people in need of humanitarian and protection assistance. The conflict is rapidly pushing the country towards social, economic and institutional collapse. More than 7 million are facing food insecurity, and more than 8 million face acute shortages of clean water and sanitation. Nearly 3.3 million people are suffering from severe acute malnutrition. An estimated 14.8 million people lack access to basic health care, including 8.8 million living in severely underserved areas. As of October 2016, at least 274 health facilities had been damaged or destroyed, 13 health workers had been killed and 31 injured. The main causes of avoidable deaths in Yemen are communicable diseases, maternal, perinatal and nutritional conditions (together accounting for 50 per cent of mortality) and non-communicable diseases (39 per cent of mortality).

INFORMATION, RESEARCH, EDUCATION AND ADVOCACY

7

There is a strong link between level of information, education and advocacy and health outcomes in a country. It has been established through research that most of the diseases can be prevented by imparting accurate and relevant information and education to patients and health care providers. Right diagnosis and an effective curing can save millions of lives both in OIC countries and in other parts of the world. Against this backdrop, this chapter discusses information, research, education and advocacy related issues under six sub sections.

7.1 Health Education System

Health education is an important tool for health system. There is a strong relationship between health education and health outcomes. Scientific reports and research papers show that there is huge disease burden in regions lacking health education such as Africa. The aim of health education is to raise awareness, expand knowledge, gain skills and shape a health-oriented attitude of particular individuals who are also perceived as elements of a society (Książek P., 2008).

Data on number of health related schools and training institutions is very scarce across the globe. According to the latest available data from the WHO's World Health Report (2006), globally there were 2420 medical schools, 467 schools or departments of public health, and an indeterminate number of postsecondary nursing educational institutions in 169 countries. These schools and institutions train about one million new doctors, nurses, midwives, and public health professionals every year.

Significant imbalances exist in number of medical school vis-a-vis country population size or national burden of disease especially in the developing world. Based on WHO's data (2006), with 1935 operating medical schools, there is, on average, one medical school for every 3.3 million persons in the world. Asia, with the largest population has the most medical schools (860). However, while over 60 per cent of the world's population resides in Asia, only 44 per cent of the medical schools are located there. Moreover, physician density is low, with less than one physician, on average, per 1000 population. In contrast, nearly 16 per cent of the world's medical schools are located in North America; while only 8 per cent of the

world's population resides there. The relatively large number of practicing physicians, especially in the North America, results in a continent-based density of 2.2 physicians per 1000 inhabitants. In Africa, there were only 126 medical schools, accounting for 6.6 per cent of the world total.

There were relatively few countries with populations of greater than four million that had no medical schools (Eritrea and Somalia). At the individual country level, nearly half of all the world's medical schools are located in 10 countries including India, USA, China, Brazil, Japan, Mexico, Russia, South Korea, Iran, and France. On the other hand, 26 countries from Sub-Saharan Africa have one or no medical schools (Frenk et.al, 2010). As of 2006 data, four OIC countries: Iran, Turkey, Pakistan and Indonesia were ranked among the top-20 countries with the most active medical schools. On the other hand, there was only one active medical school in Guinea Bissau, Gabon and Surinam

Adequate numbers of appropriately qualified human resources for health (HRH) are a critical component of any effective health system. Many regions suffer from a shortfall of health personnel. Africa represents the highest global shortfall in human resources for health. A major setback for the African region has been the migration of large numbers of highly trained doctors, educated in these countries, outside the continent (Clemens MA and Pettersson G, 2008). For example, over the ten-year period from 2002 to 2011, many Sub-Saharan countries experienced decreases in physician densities because of increasing migration (Tankwanchi ABS, et.al., 2013). In addition, until 2010, eight Sub-Saharan countries had no medical schools of their own, which necessitated dependence on expatriates and external training (Chen C, et.al. 2012). The evidences show that it is very urgent and important to develop and establish health education systems for the countries that do not have the medical schools yet.

7.2 Quality of Health Education

Quality of health education directly affects health outcomes. Education is critical to social and economic development and has a profound impact on population health. Medical education will certainly affect practice patterns and influence career choices, thereby having some distributed net effect on population health, especially in underdeveloped regions or those countries where relatively few practitioners are being trained. A major transformative opportunity for improving health among diverse communities worldwide is to reform the vision, programmes, and systems of educational institutions to train health professionals who can meet people's needs, empower communities, and enhance human wellbeing. Too often forgotten is that the production of health is knowledge-based and socially driven, and health professionals as knowledge brokers are key drivers of health advance (Zulfiqar Bhutta, et.al. 2010). Providing training that will ensure an adequate global healthcare workforce is essential. However, in today's global environment, where

there are increasing demands on healthcare systems, physicians are free to move from locale to locale or even from country to country. More important, for many of these individuals, there have been, and continue to be, numerous options as to where the medical training can take place, including institutions located outside their home countries. As a result, obtaining information on the distribution and quality of training institutions is critical to health workforce planning (WHO, 2006).

Over four million people worldwide lack access to quality health services, in large part because of a huge shortage, imbalanced skill mix, and uneven geographical distribution of health workers. WHO estimates that an additional 4.3 million health workers are needed worldwide. The health workforce crisis has disastrous implications for the health and well-being of millions of people, yet not enough health workers are being produced to close this shortfall. Scaling up educational programmes to produce multi-disciplinary service delivery teams - which include a carefully balanced mix of clinicians, community health workers and health managers - is clearly urgent and essential. However, simply increasing the numbers of workers will not be enough. The shortage of health workers is compounded by the fact that their skills, competencies, clinical experience, and expectations are often poorly suited to the health needs of the populations they serve (WHO, 2017).

A health system cannot work adequately without sufficient health workers. According to the WHO, 83 countries have less than 23 doctors, nurses and midwives per 10,000 people. They are the world's poorest countries, and this shortage is described by the WHO as 'one of the most critical constraints to the achievement of health and development goals'. In 2006, it was estimated that 25 per cent of all doctors and 5 per cent of nurses that were trained in sub-Saharan Africa were working in Organization for Economic Co-operation and Development (OECD) countries. While recent data does suggest that in some of these countries the influx of internationally-trained health workers has stabilized or declined, overall migration of health personnel to OECD countries has increased. Many of these personnel are trained at public expense. This means, essentially, that wealthy countries are benefitting from the funds poor countries are investing in training health workers (Humanosphere, 2014). Not only health care workers are migrating also educators are migrating. The migration of health workers affects all countries in one way or another. In some cases, health workers leave their home countries looking for better working conditions and career opportunities abroad. In others, they leave rural areas for urban ones. The result: increasingly inequitable access to health care, within and between countries. WHO is working with a wide range of stakeholders to find answers for scaling up the health workforce to increase the quantity, and to improve the quality and relevance of

health workers to meet the needs of the 21st century and contribute to better population health outcomes (WHO, 2017).

Evaluation is a mirror to show reality. Perhaps the most important thing about health education is that one should never simply assume that the educational materials, information and procedures used are effective. A lecture or intervention that appears to be efficacious may yield completely unexpected results and even be detrimental. Effective health education relies heavily on continual testing to ensure compliance and knowledge comprehension, to generate data that can be used to measure the efficacy of the health care work and to improve future health care education, as well as to rectify and address areas of concern as soon as they occur. Furthermore, this educational data-gathering and continual testing requires the presence of baseline “pre-testing” to establish the impact of the developed materials; educators need to gauge a student’s prior knowledge in order to measure the effectiveness of the education. This prior knowledge has been shown to have a substantial influence on a student’s observations, learning receptiveness, and perceptive beliefs. Therefore, the vast majority of health education programs should implement some means of testing a student’s prior knowledge, such as through the use of non-leading questionnaires, surveys, conversation, etc. After adequate pre-testing is achieved, educators should begin their proposed health education program. Learner follow-up should then be performed. In regards to this, there are various measures that researchers and educators can adopt to evaluate the outcomes of their health education, including:

Changes in Knowledge: Demonstrated changes in a student responses towards non-leading pre-determined questions, surveys, questionnaires, and/or other measures that relate to the specific material addressed by the health educational program. Ideally, an effective health program will result in changes that demonstrate increased factual accuracy and knowledge about specific medical and health-related issues for a prolonged period of time (Estabrooks C.A et.al. 2003).

Changes in Behavior: Effective health education will yield both short-term and long-term changes in behavior that reduce risky behavior and/or improve quality-of-life. These changes in behavior can be recorded through evaluator observations and learner feedback, or through more formal means, such as questionnaires and surveys. Importantly, the extent of a student’s behavioral change and maintenance depends heavily on the learner’s beliefs, specifically in regard to the expectations of the outcomes stemming from behavioral change as well as personal expectations about one’s ability to undergo behavioral change.

Learner/Participant Satisfaction: A subjective measure based on the learner’s perceived expectations regarding their overall experience and the actual outcome. Generally, learner/participant satisfaction data is gathered through questionnaires or surveys; the data can be used to improve health education programs through

the targeting of specific changes noted by the prior participants (Appleton-Knapp, 2009).

Cost-Effectiveness Analysis (CEA): Strictly speaking, CEA is the estimation of the net costs and effects of any action. In health education, CEA provides a way for program developers to quantitatively illustrate the “opportunity cost” of a decision: the possible socio-educational-medical benefits lost in exchange for the execution of another program. In this sense, it provides an additional metric for health workers to make informed judgments in creating an effective health educational program (Gold Marthe R, 1996).

The total global expenditure for health professional education is about US\$100 billion per year. This amount corresponds to less than 2 per cent of all health expenditures worldwide, which is a small figure for a labour intensive industry. A study reported that the average cost per graduate in the world is about \$113,000 for medical students and \$46,000 for nurses (Frenk et.al, 2010). The key challenges to ensuring access to quality nursing education in OIC countries pertain to inadequate investment and low priority given to nursing education; lack of capacity in nursing schools in terms of the availability of trainers as well as infrastructure; the need to further update nursing curricula in order to bridge the service-education gap; the limited institutional capacity to offer post-basic training programmes; and inadequate emphasis on continuous professional development programme (SESRIC, 2015).

Every single country is trying to improve their quality of education however there are so many challenges in OIC countries like any other developing countries due to economic problem, unstable politics, war, civil war, lack of professionalism, lack of human resource, lack of experiences in the field and other factors.

7.3 Adverse Drug Reactions and Irrational Use of Medicines

Medicine use is rational (appropriate, proper, correct) when patients receive the appropriate medicines, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost both to them and the community. Irrational (inappropriate, improper, incorrect) use of medicines is when one or more of these conditions are not met. Irrational use may take many different forms, for example, polypharmacy, over-use of antibiotics and injections, failure to prescribe in accordance with clinical guidelines and inappropriate self-medication.

Worldwide, it is estimated that over half of all medicines are prescribed, dispensed or sold inappropriately (WHO, 2009). Moreover, it has been estimated that half of all patients fail to take their medication as prescribed or dispensed (Sabaté E, 2003). Adverse drug reactions and irrational use of medicines is an extremely

serious global problem that is wasteful and harmful. In developing and transitional countries, less than 40 per cent of patients in the public sector and 30 per cent of patients in the private sector are treated in accordance with standard treatment guidelines (Kathleen Holloway and Liset Van Dijk, 2011). However, despite the global problem of inappropriate use, few countries are monitoring medicines use or taking sufficient action to correct the situation (WHO, 2006).

Antimicrobial resistance is dramatically increasing worldwide in response to antibiotic use, much of it due to inappropriate overuse (and is causing significant morbidity and mortality (WHO, 2009). It has been estimated that antimicrobial resistance costs annually US\$ 4000–5000 million in the USA and €9000 million in Europe (SCRE, 2004). The use of unsterile injections is associated with the spread of blood borne infections, such as hepatitis B and C and HIV/AIDS. Although evidence based medicine has gained importance the use of both diagnostic and treatment guidelines is sub-optimal and could be greatly improved.

The inappropriate use of medication is commonly occurred in health care systems globally, but widely observed in developing countries. Common examples of irrational use of medications including the usage of too many medications especially among geriatrics, overuse of antibiotics even for non-bacterial infections, overdose or under dose of some medications, widely prescribing of injection when oral is effective, self-medication and prescribing pattern that not according to the approved clinical guidelines (Akl OA et.al., 2014).

In developed and some transitional countries, where a large proportion of the population is covered by health insurance, the health insurance agency may play a significant role in promoting rational use of medicines by only reimbursing prescriptions that comply with clinical guidelines or that contain essential medicines. In some high- and middle-income countries insurance agencies are reimbursing medicines according to whether they are essential medicines, generic medicines or approved for a certain use. However, in many low-income countries, insurance coverage is low and there is insufficient infrastructure to establish health insurance in the short term. A major future challenge will be to persuade governments, donors, and the international community to invest sufficiently in promoting rational use of medicines.

The lack of understanding of some aspects of medicines use lead to dangerous actions such as considering that using two medications better than one, or thinking that using two doses are more effective than one, or thinking injections are more effective than pills, as well as using traditional medicines alongside with prescribed medicines without physician's consultation (Abbott F,et.al., 2009). The irrational use of drugs is one of the health problems that the WHO is trying to manage by developing guidelines like essential medicine list and effective prescribing. According to the WHO, public information and education on medicines

use are key elements in national drug policy. Despite progress in some countries, however, necessary human and financial resources are still limited for medicine use education for the public. It is usually dealt with a marginal activity or one to be tackled only when the other elements of drug policy are in place (Management Sciences for Health, 2012).

Medicine education and advice from health care professionals can build a well-informed patient about medicines use. Patient education may reduce the events of adverse drug reactions. Nowadays, information sharing is an important need for patients to use their medicines properly. Patients would like to receive information regarding the safety aspects of medicines that they use through various sources. Continuous efforts are needed for promoting the quality use of medicines. The health educational programs should be more focused on the appropriate use of medicines. In some countries, information leaflets are limited and people do not know how to get the accurate information (WHO, 2006). The health care professionals need to play an active role in developing health education programs and connect with independent information centres for drug-related information.

Especially in poor communities, medications are sold in many markets by unqualified persons without any control from the local health authorities. The continuous wide spreading of irrational use of medications has negative health and economic outcomes influencing both consumers and governments. Health care professionals can reduce drug related problems among consumers when working together collaboratively by educating, counselling and providing evidence-based information to the medicine consumers in order to optimize medicine use.

7.4 Checks and Balances to Control Malpractices

Medical malpractice involves patient damage, injury or death attributed to negligent behaviour by a medical practitioner or other health care professions (Ritchey FJ, 2014). Often patients (or their families), who think to have been victims of medical malpractice, file claims against health care providers. This possibility has a potentially strong impact in terms of costs and reimbursements, and it leads doctors, other health care professions and health care organizations to underwrite liability insurance policies in order to offset their risks. There are very limited data available regarding malpractice worldwide. Most of the countries do not collect and report data on the malpractice incidences.

According to some estimates, as many as 18,000 people die every year as a result of medical error, while 50,000 people suffer a permanent injury (Emily B., 2013). Misdiagnosis, missed or delayed diagnoses are major causes of malpractice complaints. When a doctor misdiagnoses a condition or, alternately, fails to diagnose a condition for some period of time, the patient could miss treatment opportunities that might cause serious harm or death. Indeed, a misdiagnosis could

lead to the prescription of treatments that are not appropriate for the patient, also potentially resulting in harm. A number of injuries can be caused by medical malpractice to a foetus during pregnancy or to a child during the birth process. Some of these injuries can be quite severe, such as brain injuries (like cerebral palsy and seizure disorders), fractured bones, and full or partial paralysis. Of course, many of these are caused by natural causes, as well. Nevertheless, if a doctor's negligence caused these conditions or the doctor failed to take steps to treat a condition that could lead to these conditions, medical malpractice may have occurred.

Medication Errors: Medication errors are one of the most common forms of medical malpractice and can occur many ways. For example, a doctor might make a mistake on the initial prescription, administer a drug inappropriately, or fail to take notice of a potentially harmful drug interaction. In a hospital setting, one common form of injury results from the wrong medication being given to the wrong patient. However, the most common medication errors, by far, involve improper dosage.

Anaesthesia Errors: Anaesthesia mistakes are relatively infrequent, but can be more dangerous than surgery mistakes. Even small error by the anaesthesiologist can result in permanent injury, brain damage, or death. Typical causes of malpractice by anaesthesiologists include failing to investigate the patient's medical history for possible complications, or failing to inform the patient of necessary preoperative procedures (like not eating for a certain period before surgery). Other common anaesthesia errors include giving too much anaesthesia to the patient, failing to monitor the patient's vital signs, improperly putting a tube in the trachea to assist the patient with breathing ("intubation"), or using defective equipment.

Surgery Errors: Occasionally, a surgeon might make a mistake in the operating room. A surgeon might make negligent errors during the surgery itself, like puncturing an organ or blood vessel, operating on the wrong body part, or leaving surgical equipment inside the body. Alternatively, nursing staff could be negligent in postoperative care, resulting in giving the wrong medications, using improper procedures that could lead to infection, or failing to give the patient adequate instructions for their own postoperative recovery needs.

7.5 Social and Cultural Issues related with Health Services

It is now widely recognized that health outcomes are deeply influenced by a variety of social and cultural factors outside of health care. An understanding of cultural differences and attitudes is needed for effective healthcare to be delivered appropriately. All cultures have systems of health beliefs to explain what causes illness, how it can be cured or treated, and who should be involved in the process.

Cultural issues play a major role in patient compliance. The extent to which patients perceive health services in compliance with their cultural values has a profound effect on their reception to information provided and their willingness to use it. Usually, in developed societies diseases are regarded a result of natural scientific phenomena and authorities advocate medical treatments that combat microorganisms or use sophisticated technology to diagnose and treat disease. Whereas; in some other social and cultural context people believe that illness is the result of supernatural phenomena and therefore, only spiritual intervention is enough to get rid of it.

The increasing diversity of the nation brings opportunities and challenges for health care providers, health care systems, and policy makers to create and deliver culturally competent services. Cultural competence is defined as the ability of providers and organizations to effectively deliver health care services that meet the social, cultural, and linguistic needs of patients (Betancourt, J. R et.al.,2002). A culturally competent health care system can help improve health outcomes and quality of care, and can contribute to the elimination of racial and ethnic health disparities. Examples of strategies to move the health care system towards these goals include providing relevant training on cultural competence and cross-cultural issues to health professionals and creating policies that reduce administrative and linguistic barriers to patient care.

The extended family has significant influence, and the oldest male in the family is often the decision maker and spokesperson in majority of developing societies. Usually, the interests and honour of the family are more important than those of individual family members. Older family members are respected, and their authority is often unquestioned. Usually, a key family member is consulted for important health-related decisions. Among Asian cultures, maintaining harmony is an important value; therefore, there is a strong emphasis on avoiding conflict and direct confrontation. Due to respect for authority, disagreement with the recommendations of health care professionals is avoided. However, lack of disagreement does not indicate that the patient and family agree with or will follow treatment recommendations. Among Chinese patients, because the behaviour of the individual reflects on the family, mental illness or any behaviour that indicates lack of self-control may produce shame and guilt. As a result, Chinese patients may be reluctant to discuss symptoms of mental illness or depression.

African continent is one of the largest continents of the world and it's a multi-ethnic society with its peculiar nature and diverse practices. For example, Nigeria, as a country, is made up of people from different ethnic groups and cultural practices. It has more than 250 ethnic groups with different cultural practices. Some of these cultural practices, which have endured centuries of practice work

for the people. It is not uncommon to think of something crude and bad whenever one talks about cultural practices as it concerns health.

Many cultural practices have helped to perpetuate and increase the prevalence of certain diseases and health problems. However, not all cultural practices and beliefs are bad. Many have withstood centuries and actually promote health. Most of the negative practices are due to ignorance and non-availability of better alternatives. Efforts should be made to encourage those practices that promote health and then, through the provision of information and better health care services, discourage those that harm human health.

Authorities in countries like Nigeria and Pakistan have often reported the opposition of religious and political groups to carry out national polio vaccination campaigns. To overcome this problem, the OIC GS secured a religious injunction from the Islamic Fiqh Academy which issued a fatwa to encourage the Muslims to participate and support the national polio vaccination campaigns. Quoting extensively from the Qur'an, the fatwa lays out the duty to protect children when disease is preventable. Thus, the fatwa addresses the critical need to raise awareness in Muslim communities about the benefits of polio immunization campaigns. However, there is a strong need for similar fatwas to support all kinds of immunization campaigns in OIC countries (SESRIC, 2014).

7.6 Public Health Awareness Schemes

Public health is the science of protecting and improving the health of families and communities through promotion of healthy lifestyles, research for disease and injury prevention and detection and control of infectious diseases. Overall, public health is concerned with protecting the health of entire populations. These populations can be as small as a local neighborhood, or as big as an entire country or region of the world. Public health professionals try to prevent problems from happening or recurring through implementing educational programs, recommending policies, administering services and conducting research – in contrast to clinical professionals like doctors and nurses, who focus primarily on treating individuals after they become sick or injured. Public health also works to limit health disparities. A large part of public health is promoting healthcare equity, quality and accessibility.

Information Communication Technology (ICT) has proven to be a strong public health tool. In developing countries, preventable diseases and premature deaths still inflict a high toll. Inequity of access to basic health services affects distinct regions, communities, and social groups. Under-financing of the health sector in most countries has led to quantitative and qualitative deficiencies in service delivery and to growing gaps in facility and equipment upkeep. Inefficient allocation of scarce resources and lack of coordination among key stakeholders

have led to duplication of efforts, overlapping responsibilities, and resource wastage. Most countries are at some stage of health sector reform, trying to provide expanded and equitable access to quality services while reducing or at least controlling the rising cost of healthcare. Health reform processes have many facets and there is no single model being adopted by all countries.

ICTs have the potential to make a major contribution to improving access and quality of services while containing costs. Improving health involves improving public health and medical programs designed to provide elective, emergency, and long-term clinical care; educating people; improving nutrition and hygiene; and providing more sanitary living conditions. These in turn ultimately involve massive social and economic changes, as many health challenges go well beyond the health sector.

The health sector has always relied on technologies. According to WHO (2004), they form the backbone of the services to prevent, diagnose, and treat illness and disease. ICTs are only one category of the vast array of technologies that may be of use. Given the right policies, organization, resources, and institutions, ICTs can be powerful tools in the hands of those working to improve health. Embedded in this are issues of broadcasting rights and regulations controlling the media. Connectivity access measured in terms of telephone access, personal computer ownership, and Internet connectivity. Inequitable access also exists within societies. Within developing countries, segments of the population have been bypassed by the products of the information revolution. This is complicated by the fast-changing deployment of new technologies and accompanying standards that constantly raise the level of advancement that must be met by anyone who wants to remain current (Ishaq, 2001). This is part of a set of much broader constraints that include insufficient telecommunications infrastructure, high telecommunications tariffs, inappropriate or weak policies, organizational inefficiency, lack of locally created content, and uneven ability to derive economic and social benefits from information-intensive activities.

A recent studies have identified a strong connection between the use of the telephone and an increased demand for health services in Bangladesh, Peru, and Laos. The analysis at the household level shows that basic telephone service offers opportunities in delivering timely information on health services to households with relatively greater demand for this type of information. Health workers will be able to track and monitor patients' symptoms using mobile phones with text capabilities in conjunction with a central database. For example, visiting nurses in the field might ask people living with HIV or people with TB a series of yes/no questions about their status, symptoms, and reactions to particular medications.

The most enduring and established of ICTs, radio continues to maintain a central position in developing country health communication. Health workers in villages

can now carry VCD and DVD players that can communicate a basic message, which can then be followed through with discussion. In the past, video has been expensive to make and difficult to show in rural areas. Production of a video can now be done on a basic computer, and the cost of making a local language video produced by local health workers is less than a few hundred dollars. Portable digital players can be easily used to show the video. This process is only going to get easier. The NGO Gamos has explored this in Mexico, Moldova, South Africa, Cambodia, and Ghana. Impact studies show a remarkable change in knowledge and behavior based on the videos. In Ghana a number of agencies, including the Health Foundation of Ghana, have now trained their staff and are beginning to develop local language videos that can be shared with each other (Gamos, 2005).

Some OIC countries have already started to use ICT in health widely; Turkey is one of these countries (Tatar, 2011). The healthcare information technology (IT) infrastructures in Turkey includes Sağlık-Net (Turkish for “Health-Net”), Centralized Hospital Appointment System, Basic Health Statistics Module, the Core Resources Management System, and the e-prescription system of the Social Security Institution. The Sağlık-Net has two main components: The National Health Information System (NHIS) and the Family Medicine Information System (FMIS). The NHIS is a nation-wide infrastructure for sharing patients’ Electronic Health Records (EHRs). So far, EHRs of 78.9 million people have been created in the NHIS. Similarly, family medicine is operational in the whole country via FMIS. Centralized Hospital Appointment System enables the citizens to easily make appointments in healthcare providers. Basic Health Statistics Module is used for collecting information about the health status, risks and indicators across the country. Core Resources Management System speeds up the flow of information between the headquarters and Provincial Health Directorates. The e-prescription system is linked with Sağlık-Net and seamlessly integrated with the healthcare provider information systems. Finally, Turkey is involved in several international projects for experience sharing and disseminating national development. While some countries still using classic technologies due to enabling telecom policy and regulatory environment, lack of access to electricity, solar power options, and power supply back-ups, insufficient infrastructure and connectivity access, and high costs.

CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

8

The 57 OIC member countries cover a large geographical area, spread out on four continents, extending from Albania (Europe) in the North to Mozambique (Africa) in the South, and from Guyana (Latin America) in the West to Indonesia (Asia) in the East. The OIC countries constitute a substantial part of the developing countries, and, being at different levels of economic development, they do not make up a homogenous economic group. The mixed nature of the group of the OIC countries reflects high levels of heterogeneity and divergence in the economic structure and performance of these countries. The degree of heterogeneity in the macroeconomic and developmental profiles of OIC countries also reflects in their performance in the health sector.

The health care coverage situation remained significantly poor in many OIC countries mainly due to the lack of adequate and sustainable financial resources, insufficient trained health workforce and poor health infrastructure. Currently, OIC countries allocate only 4.6 per cent of their GDPs for health whereas health expenditures account only 8.4 per cent of their total government expenditures. Out-of-pocket health spending remained the most widely used method for health financing, accounting for 36 per cent of total health spending and 82 per cent of private health expenditures. At the individual country level, out-of-pocket health expenditures account for more than 50 percent of total health expenditure in 16 OIC countries. On the other hand, average density of health workers in OIC countries is just above the critical threshold of 23 health personnel (doctors, nurses and midwives) per 10,000 people, generally considered necessary to deliver essential health services, and even less than 10 hospital beds are available for 10,000 people in OIC countries.

Over the years, many OIC countries have made significant progress in terms of fulfilling women and children's right to health, with more resources than ever being invested in the primary health care services. Although, on average, maternal mortality rate has declined by 44 per cent between 1990 and 2015, many member countries have missed the MDG5 target of three-quarters reduction by 2015. A similar situation prevailed for the under-five mortality rates, as the reduction of 52 per cent was not enough to achieve the MDG4 target of two third reductions in child mortality by the end of 2015. Nutrition and food security is another major area of concern for the OIC countries. As a result, not only the risk of child death from common illness such as diarrhea, pneumonia, and malaria remained quite elevated in OIC countries but also many children are suffering from physical and

cognitive impairments caused by the malnutrition and deficiencies of vital micronutrients like vitamin A, iodine and iron.

An analysis on the state of disease prevention and control shows that, on average, OIC countries improved their stance and many of them achieved to reduce mortalities caused by CDs and NCDs. However, the average of OIC countries in many diseases and risk factors still stay higher than the average of developed countries as well as the world average. This implies the existence of problems related with disease prevention and control as well as problems associated with the equal access to health services between male and female population in OIC countries. In other words, OIC countries, on average, still have a long-way to go and reach the level of developed countries in prevention and control of many diseases. Both communicable and non-communicable diseases are responsible for around 89 per cent of all deaths in OIC countries.

OIC countries, as a group, remained net importer of pharmaceuticals and with few exceptions, the majority of them have very low pharmaceutical production base. Considering the relatively high cost of health care, due to unavailability of medicines, many OIC countries have to make some serious efforts to boost the pharmaceutical industry in their economies. Medical devices are also one of the most important health intervention tools available for the prevention, diagnosis and treatment of diseases, and for patient rehabilitation. However, availability and procurement of these devices is an ongoing challenge in many OIC countries.

Emergencies and disasters can put the continuity and sustainability of health sector services at risk, and destroy many years of health sector development. They may create severe health problems directly as a result of the hazard or through the disrupting health system, facilities and services, and limiting access to health care. Conflict-affected countries experience severe consequences in health services and outcomes. Although some OIC countries has made progress in managing disaster risks and associated health response, the capacities of many countries remain extremely variable. There are large discrepancies across countries in terms of emergency health management capacity. In order to make a comprehensive analysis on the existing capacities of OIC countries, there is a need for assessment studies for each country.

Changes seen in the characteristics of patients and developments observed in technology increased concerns on the quality of health education and training of health professionals all across the world. The quality of health education at medical schools and nursery schools has not been matched fully with the demands of patients and their necessities. Moreover, these educational schools, even in developed countries, could not equip prospective health professionals with the use of the state-of-the-art technologies and interpretation of data obtained from patients appropriately. OIC countries are not an exception of these facts. Furthermore, there is a strong link between level of public awareness and health outcomes in a country. It has been established through research that most of the diseases can be prevented by imparting accurate and relevant information and education to patients and health care providers. According to the WHO, majority of

heart diseases, strokes, Type 2 diabetes and cancer cases could be prevented just by educating and informing people about healthy diet, physical activity/exercise and not using tobacco. Over one million lives per year could be saved by promoting breast feeding until at least two years and a bulk of under-five deaths could be avoided by educating parents about importance of nutrition and efficient use of their food money which they sometimes spend on sweets for their children to give them as treat.

Against this backdrop, following policy recommendations have been suggested to enhance the implementation of interventions at both national and intra-OIC and international cooperation level to improve the state of health in OIC countries.

Health System Strengthening

Health system strengthening requires a wide range of actions both at national and regional level. Majority of the OIC countries rely heavily on out-of-pocket expenditure to finance health services whereas the share of social security and private health insurance in total health expenditures remained comparatively very low. This has been one of the major obstacles to provide health services to the low income poor groups of the society. This state of affairs necessitates fundamental reforms in health financing system to enable wider access to health services. The reforms require continued increasing investment and public spending on health, reducing out-of-pocket spending and increasing pre-payment and risk-pooling, which may include tax-based financing, compulsory social insurance and other types of health insurance. There is sufficient fiscal space to increase the budgetary allocations for health sector and to establish an accountability mechanism to ensure transparent and efficient use of these funds. There is a need to take necessary policy measures to facilitate Intra-OIC investment in health sector and enhance collaboration with international agencies like WHO, UNICEF and World Bank to benefit from their expertise and financial contribution to build health infrastructure. Learning from the best practices, OIC countries should start prepayment and risk pooling based health financing schemes like Seguro Popular in Mexico, New Rural Cooperative Medical Scheme in China and Social Health Insurance Scheme in Mali to overcome financial barriers to health care access especially in rural areas.

Demographic and epidemiological changes, introduction of new technologies and initiation of new treatment methods all contribute to the growing need to deal with the status, performance and problems of health workers. In this respect, a comprehensive assessment should be made related to the number of people to be trained, diversity of workforce to be prepared in proportion to demographic and socio-cultural characteristics of population and capability of health workers to be developed when performing tasks assigned to each health worker. Insufficient health workforce in the OIC countries indicates low level of healthcare capacity

and services, a threat which necessitates encouraging development of more adequate human resources in the fields of medicine and healthcare. In order to overcome the shortage of well-trained efficient health workforce, OIC countries need to focus on establishment of a health service commission for training, recruitment and management of health workforce at both national and Intra-OIC level and enhancement of cooperation both at national and Intra-OIC level to increase investment in health education and training institutions. There is also a need for increasing scholarship programs to attract more students in health professions and mutual recognition of medical diplomas, certificates and degrees. Financial and non-financial incentives should be devised to improve the supply of health workers in rural and remote areas. Enhanced level of cooperation with NGOs and international bodies could also pave the way for training and deployment of health workers at the community level (like community midwives in Indonesia and Leady Health Visitor (LHV) program in Pakistan) to provide especially MNH services in rural areas.

Disease Prevention and Control

Policy-makers need to formulate effective strategies in order to promote and raise public awareness on healthy life styles. In order for OIC countries to achieve this, both in terms of prevention and control of CDs and NCDs, they need to develop and implement effective strategies in line with the international guidelines and in cooperation with the relevant international organisations. In this context, the OIC SHPA 2014-2023 provides a window of opportunity to enhance cooperation among OIC countries in disease prevention and control. The existing WHO Guidelines also propose strategies in combating with several communicable and non-communicable diseases that can be applicable to many OIC countries.

Building up mechanisms and platforms to share country experiences and transfer best-practises will help many OIC countries to develop and adopt effective prevention and disease methods with a zero cost. In this context, the Reverse Linkage Programme of the Islamic Development Bank constitutes an important benchmark programme that needs to be explored and utilised by OIC countries.

The existence of heterogeneity in terms of development profiles of OIC countries also reflects in their performance in disease prevention and control. In other words, the necessities and priorities of OIC countries can vary significantly in the domain of disease prevention and control depending on their climate, quality of infrastructure, available public funds etc. Therefore, international guidelines and intra-OIC cooperation have their limits to help OIC countries in disease prevention and control. In this regard, the lion share of the responsibility in disease prevention and control still remains with national policy-makers, experts and civil

society in OIC countries. Therefore, training of policy-makers, experts and civil society is an integral part of developing and implementing a successful disease prevention and control strategy in order to equip them with the recent scientific knowledge, information and state-of the art technologies to combat with diseases. In this context, OIC countries can extensively benefit from training and capacity building programmes of the Statistical Economic and Social Research and Training Centre for Islamic Countries (SESRIC) in the domain of health, which aim to foster intra-OIC cooperation especially through matching the needs and capacities of the member countries and facilitating the transfer of knowledge and best practices among them.

Maternal, New-born and Child Health and Nutrition

State of maternal, new-born and child health and nutrition remained significantly poor in many OIC countries. The challenge now facing the high-burden OIC countries is how to achieve universal coverage of effective interventions including antenatal and postnatal care, safer deliveries, care for new-borns and infants, breastfeeding, micronutrient supplementation and routine immunization against preventable diseases while optimizing investments and enhancing accountability to improve the health and nutritional status of women and children.

In this respect, priority actions should include training of antenatal care providers; improving supplies and logistics for health facilities; strengthening the referral linkages between communities and hospitals providing emergency maternal and child care; investing for more and better trained and equipped health workers to reach the majority of children who today do not have access to basic health care; developing home-based maternal and new-born care programmes based on successful models of community health workers; educating families and communities in how best to bring up their children healthily and deal with sickness when it occurs; and making better use of data to monitor and improve child health care coverage and quality.

To improve the immunization coverage among children, priority actions for the governments and other stockholders should include formulation of innovative strategies to achieve high and equitable immunization coverage; development and use of new vaccines and technologies; synchronization of Vaccination Week within the OIC countries; fighting taboos against vaccination through the involvement of political and religious community leaders; and operationalizing the OIC Pooled Vaccine Procurement mechanism to secure timely supply and access to quality vaccines, particularly to new and underutilized ones, at competitive prices.

Governments should take necessary measures to improve the nutritional status of children by targeting the incidence of underweight, stunting, wasting and

overweight among children. Provided the fact that health of mother is critical for the child, countries should develop and improve public health programs and services to provide education and resources to women of child bearing age to promote healthy nutrition prior to conception and during pregnancy, and provide assessments to at-risk pregnant women to help ensure that they receive appropriate medical attention. In addition, efforts should also be made to prevent women from becoming smokers and encouraging those who do smoke to quit. Academic and clinical research on major causes of malnutrition-related disorders is another area of paramount importance which needs due consideration of policy makers. In order to address the obesity, population-wide weight-control campaigns to raise awareness among medical staff, policy-makers and the public at large to reduce obesity have been very effective. In addition, keeping a check on the marketing of unhealthy foods and sugary drinks to children, and controlling the use of misleading health and nutrition claims is also very important. In some countries, governments have also increased taxation on high-calorie, low-nutrition foods to reduce the consumption of such products.

Promotion of exclusive breastfeeding for 6 months and continued breastfeeding up to two years of age and beyond is critical for the nutritional status of babies. As recommended by the Global Strategy for Infant and Young Child Feeding (WHO, 2003) , all mothers should have access to skilled support to initiate and sustain exclusive breastfeeding for 6 months and ensure the timely introduction of adequate and safe complementary foods with continued breastfeeding up to two years or beyond. To address the grievances of working mothers, governments should enact legislation protecting the breastfeeding rights of working women and establishing means for its enforcement in accordance with international labour standards. Furthermore, fortification of foods; micronutrient supplementation; and treatment of severe malnutrition are also important policy areas especially for the high burden countries. In this regard, OIC countries can benefit from the technical and financial support of international institutions and development partners through initiatives like Scaling Up Nutrition Movement (SUN) which helps countries in developing and implementing national infant and young child feeding policies; collaborating with partners to implement programmes with shared nutrition goals; and mobilising resources to effectively scale up nutrition with a core focus on empowering women. Currently, 55 countries are part of this movement including 26 OIC countries.

Medicines, Vaccines and Medical Technologies

Pharmaceutical production requires skilled human resources like scientists, pharmacists, biologists and lab technicians. Therefore, OIC countries should encourage and empower their education system to impart quality knowledge in

academic disciplines like Chemistry, Biology, Medicines and other natural sciences. On the other hand, OIC countries should also give due attention to convert the brain drain of high-skilled people into brain gain by facilitating the national Diaspora to return to their countries. Furthermore, pharmaceutical industry relies heavily on research and development (R&D) activities. Proper R&D facilities should be built and researchers and technicians should be provided with necessary financial resources to develop an innovative pharmaceutical industry in the OIC economies. At the intra-OIC level, OIC countries should collaborate with each other by sharing expertise for the development of pharmaceutical industry. At the same time, students mainly from least developed member countries can be enrolled in pharmaceutical related academic disciplines in other OIC countries with substantial pharmaceutical base like Turkey, Egypt, Jordan and Malaysia to equip them with the necessary knowledge and expertise in this field. At the international level, OIC countries should collaborate with the international agencies like WHO and World Bank to benefit from their expertise and financial contribution to build their domestic pharmaceutical industry. OIC countries should work towards regional harmonization and simplification of regulatory requirements so as to increase access to good quality, safe and effective medicines.

Moreover, access to treatment is heavily dependent on the availability of affordable medicines. A regular supply of essential medicines in OIC countries is required to avoid medicine shortages that can cause avoidable suffering and death. Pharmaceutical companies in OIC countries could be encouraged to produce more affordable essential medicines locally. More precisely, support to the local manufacturers of medical products i.e. policies that reduce the cost of manufacture such as grants, subsidies, land, tax and duty exemptions for imported inputs for local production should be facilitated. OIC countries should support the development of technical specifications for medical devices in order to provide information for decision-makers about the minimum requirements needed for a device to be procured. They also need to develop national guidelines and policies in accordance with international norms and standards on the procurement and distribution of vaccines, medicines and medical devices in order to ensure the safety, efficacy, and quality across the distribution channels.

Emergency Risk Management for Health

Health, education and skills development are three critical areas where investment in human capital can make real difference in strengthening the resilience of people, reducing the likelihood of a crisis and recovering from a crisis situation. However, OIC countries are trailing behind the world averages in all these indicators, reflecting their vulnerability to crises. While accounting for nearly a quarter of the world population, OIC countries accounts only for 4.6 per cent of the global health

spending. Therefore, there is a need to develop strategies and programmes to improve health and educational outcomes and capabilities of people in technical and practical knowledge.

The levels of exposure, vulnerability and coping capacity of OIC countries to various disasters and conflicts are quite heterogeneous. While some countries are quite advanced in managing risks associated with potential humanitarian crises, others require substantial improvement in capacities to reduce vulnerabilities and cope with the risks. This fact creates an opportunity for intra-OIC (or south-south) cooperation in building resilience in vulnerable OIC countries.

It is evident that several OIC countries face serious obstacles in strengthening their health system capacities due to ongoing conflicts or lack of adequate resources. OIC countries need to establish health emergency preparedness and response policies or enhance existing policies and programmes. A disaster management mechanism with an appropriate administrative structure is an essential component for the coordination of the response by the health sector and other stakeholders in the event of an emergency.

Comprehensive strategic plans based on international disaster risk management frameworks are critical to set out multi-sector guidelines, roles and responsibilities for the coordination of a rapid and effective response to an emergency. Effective management of humanitarian crises is, however, very much related to good institutions. For good governance and inclusive development, there is a need for developing and implementing inclusive development programmes and policies managed by strong national and local institutions.

Robust public health infrastructure is the foundation for a strong and rapid response during any emergency. Health facilities must be built and modified to withstand disasters. Hospital emergency preparedness and response plans must be developed and tested. Moreover, enough resources should be allocated for the establishment and functioning of national programmes and the capacity of health personnel for emergency response must be strengthened through regular trainings.

Information, Research, Education and Advocacy

The challenges related with the quality of health education and public awareness point out the necessity of reforms to upgrade the quality of health education in OIC countries. In this context, many OIC countries need to undergo a major reform process to have better health education and training systems. For the success of such reforms, cooperation with international community and organisations are crucial. The existing international guidelines (e.g. the WHO Guidelines and the OIC

Strategic Health Programme of Action) can help OIC countries to save money and time during the reform process. Enhancing intra-OIC cooperation through identifying and transferring best practices in health education and training can also make a significant contribution to improve the quality of health services and education in OIC countries. The existence of heterogeneity and varying local conditions both across and within OIC countries require more evidence from the field and views from civil society organisations. Otherwise, reform attempts to improve the quality and scope of health education and services will become unsuccessful due to the negligence of many regional/local conditions and restrictions in many OIC countries.

Involvement and commitment of all stakeholders is also very crucial to initiate and implement effective community health information, education and advocacy programmes. To do so, OIC countries are recommended to organize conventions of local health care providers, community leaders and local people to make community health information and promotion interventions more culturally relevant and responsive; create public-private partnership and involve civil society, NGOs and international organizations to address the issues related with financing and outreach of national disease prevention and health promotion programmes; launch country wide school health program to promote awareness among youth especially about risk behaviours like inadequate physical activity, poor nutrition, hygiene and tobacco use etc.; and enhance intra-OIC level cooperation to harmonise health information, education, and advocacy practices with the international standards by implementing the guidelines provided by international health agencies.

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