

# **The production of healthcare workforce for an ageing society**

*Professor Hafiz T.A. Khan*  
*University of West London, UK*

10<sup>th</sup> International Conference of Management and  
Industrial Engineering ICMIE 2021

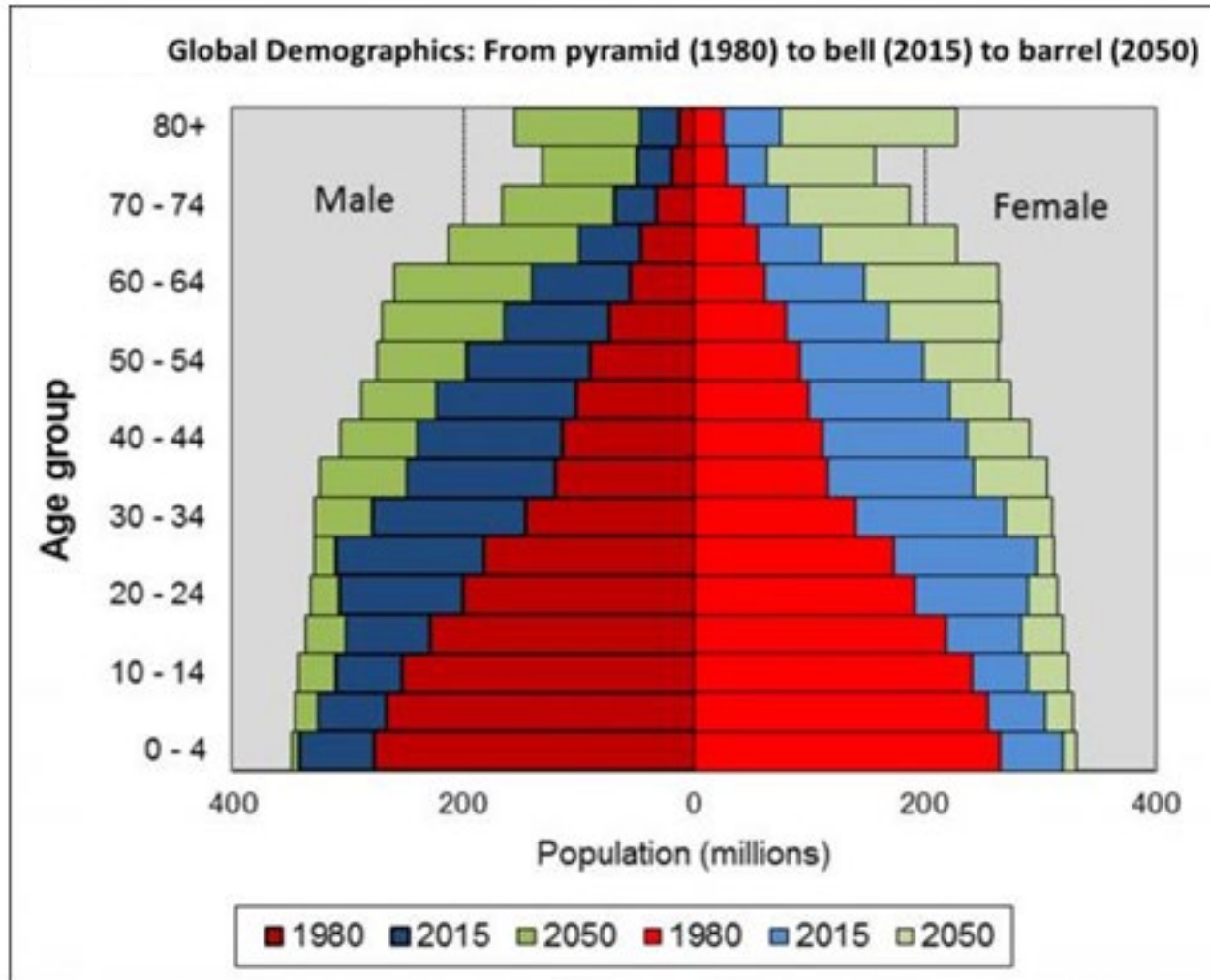
University Politehnica of Bucharest, Romania

11-12 November 2021

# Outline:

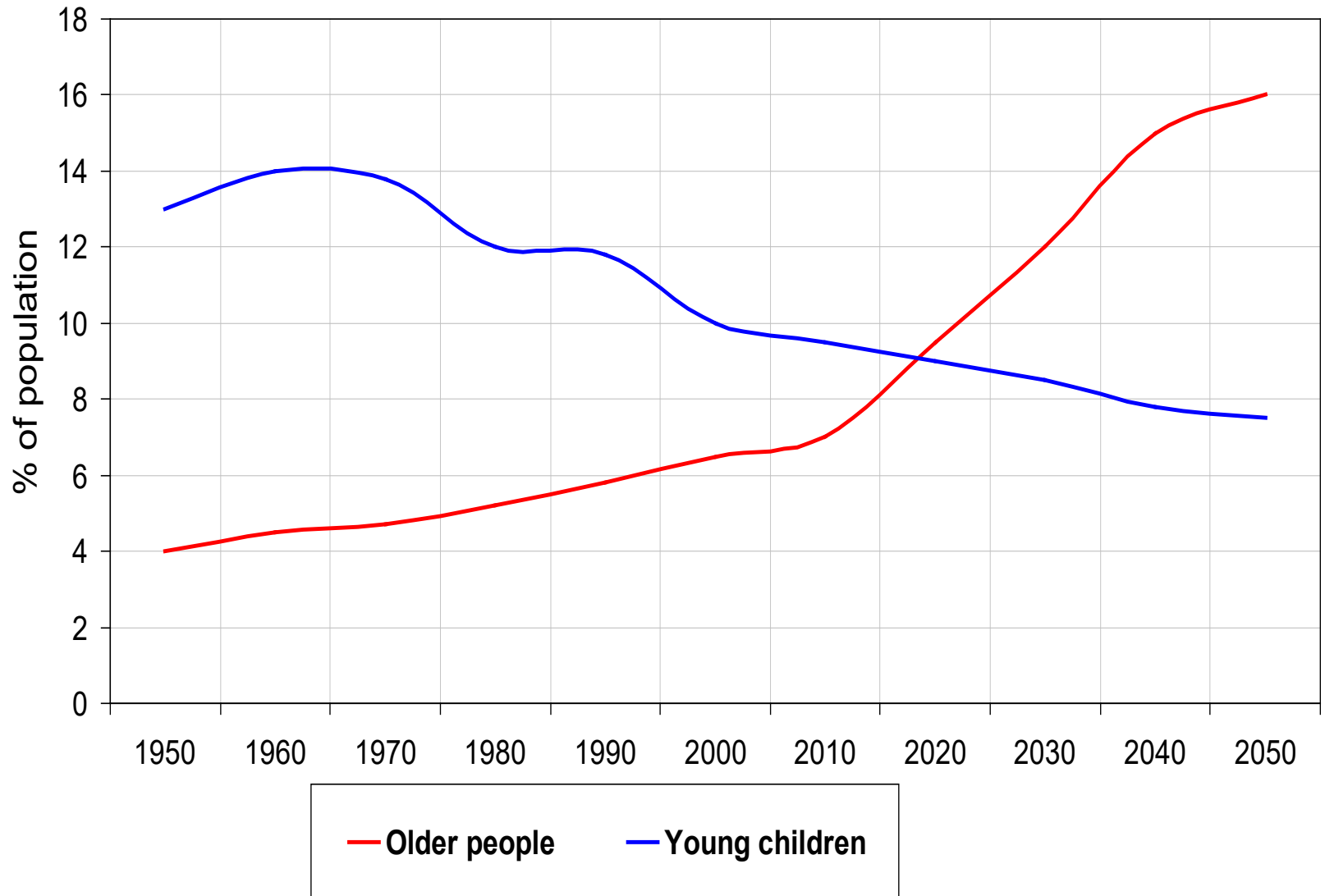
- Demographic ageing
- Demand for healthcare workforce
- Supply for healthcare workforce
- Production of healthcare workforce
- Healthcare workforce caring for older adults
- Healthcare management training and gerontechnology
- Skilled healthcare workforce for elderly

# The demographic ageing



Source: Calculations by Emi Suzuki based on WDI 2014 and UN World Population Prospects 2012 Revision

# The future that's here already



# Global ageing populations

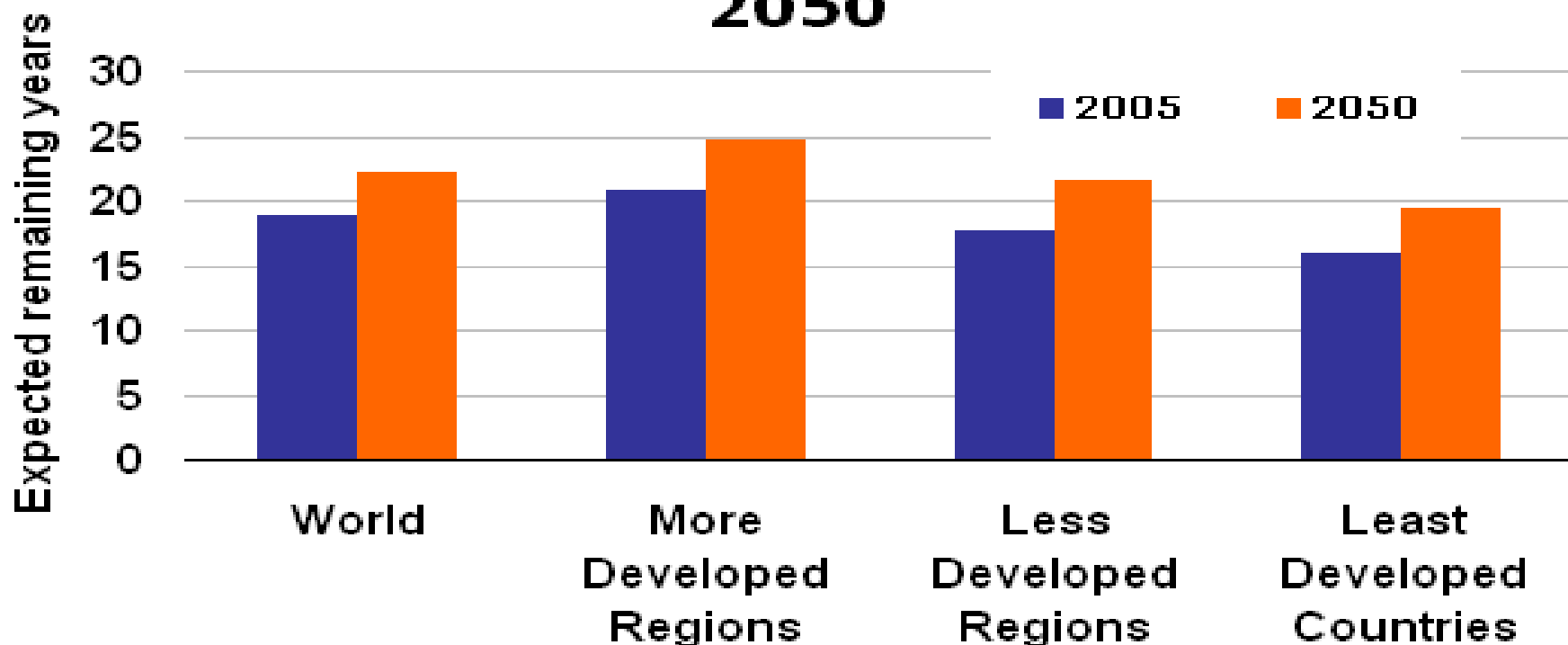
- In 2009, the global number of older people passed 700 million. This is projected to be 2 billion by 2050. *Already two-thirds live in low & middle income countries*
- In the “more developed” regions over 20% of the population is 60+. By 2050, nearly 33% of the population is projected to be in that age group
- In the “less developed” regions, older people account today for 8% of the population; by 2050 they are expected to account for over 20%

# The century of ageing

- **The 21st century is the century of ageing.**
- **Life expectancy is extending worldwide, fertility rates are falling, and ageing is accelerating.**

# Longer lives everywhere...

## Life expectancy at 60 - 2005 & 2050



World population prospects. The 2004 revision population database  
UN department of economic and social affairs.

# Why global population ageing matters

Preparing ...for longer lives and finding ways to reduce age-related disability should become national and global priorities.

For nations, as for individuals, it is critical to address problems sooner rather than later.



# The rising demand for care

- Rapid growth in the number of the oldest old
- Increase in labour force participation by women & growing migration
- Attitudes to care giving show signs of changing
- In 2010 an estimated 35.6 million people are living with dementia – this is projected to double every 20 years, reaching 115.4 million in 2050

# Why this matters

Long-term chronic illness and the need for long-term care  
have major impacts on

## **individuals and households**

psychological stress – for older people and caregivers  
economic burden – producers become consumers of  
care

## **societies and economies**

loss of productivity, lost development

# Demand for healthcare

There is a demand for healthcare workforce for an ageing society. The demand for health care workers is expected to increase in future due to rising incomes, continual technological change, and ageing populations.

The health care comprises an extremely diverse range of goods and services, including surgical procedures, screening programmes, pharmaceuticals and counselling services.

*We refer to all of these as “products”.*

# Type of healthcare providers

There are many different types of healthcare provider, including hospitals, GP practices, pharmaceutical companies, and ambulance services. We refer to these as “firms”.

Hospitals, for example, produce an enormous variety of healthcare products.

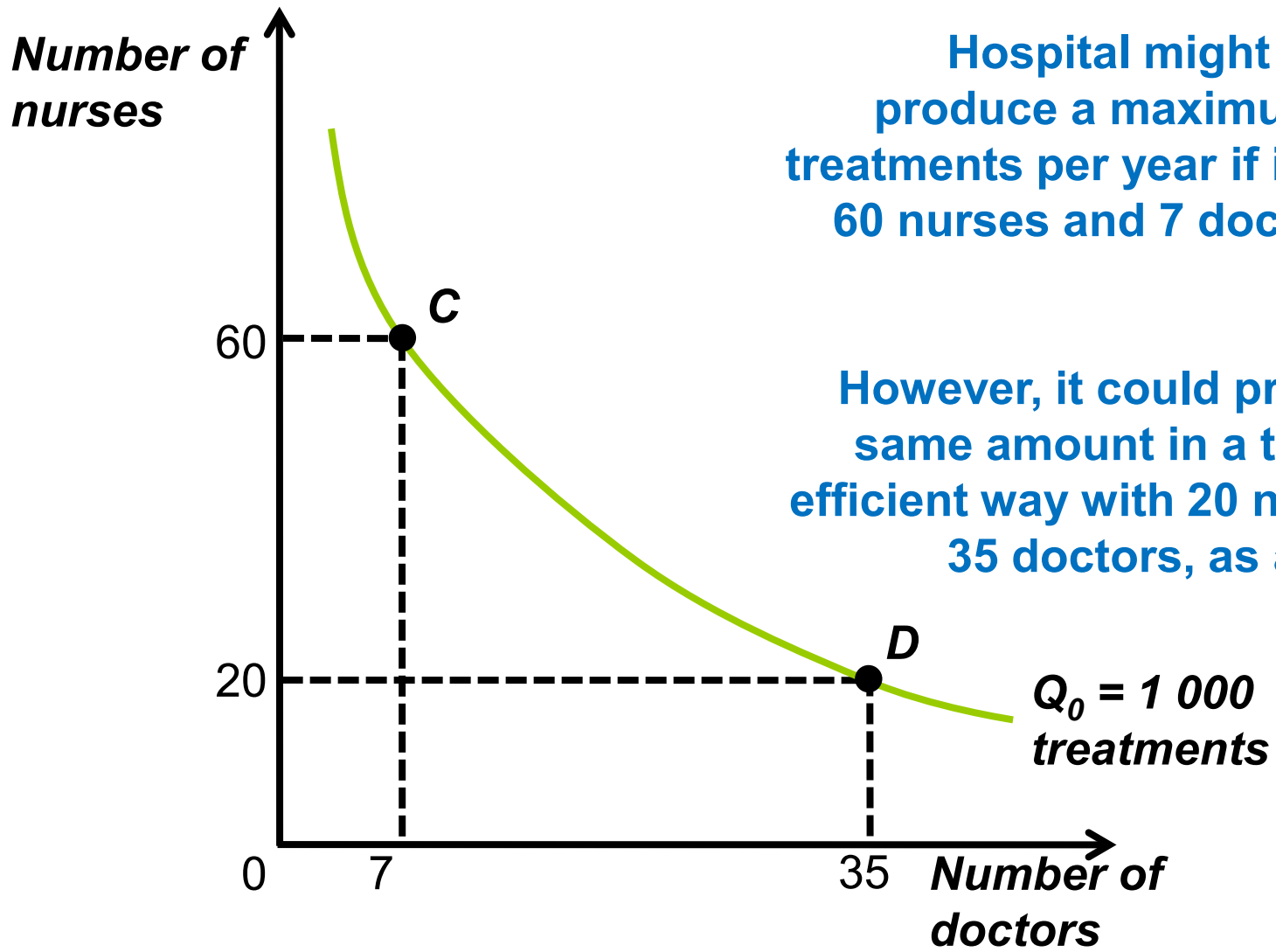
# Production of healthcare

There may be more than one technically efficient way to produce an amount of output.

For example, the number of treatments that can be carried out in a hospital depends on the number of medical and nursing staff that the hospital has and on other inputs.

To some extent, it is possible to substitute between medical and nursing staff, because either staff type could carry out some tasks.

# Production function and isoquant



Hospital might be able to produce a maximum of 1000 treatments per year if it employs 60 nurses and 7 doctors, as at point C.

However, it could produce the same amount in a technically efficient way with 20 nurses and 35 doctors, as at point D.

$Q_0 = 1000$   
treatments

# Healthcare workforce

There are many different types of health care workers.

These include doctors, dentists, nurses and midwives, as well as a host of allied health professionals involved in the health care that patients receive, including pharmacists, radiographers, dieticians, occupational therapists, physiotherapists, paramedics, and speech, language, drama and music therapists.

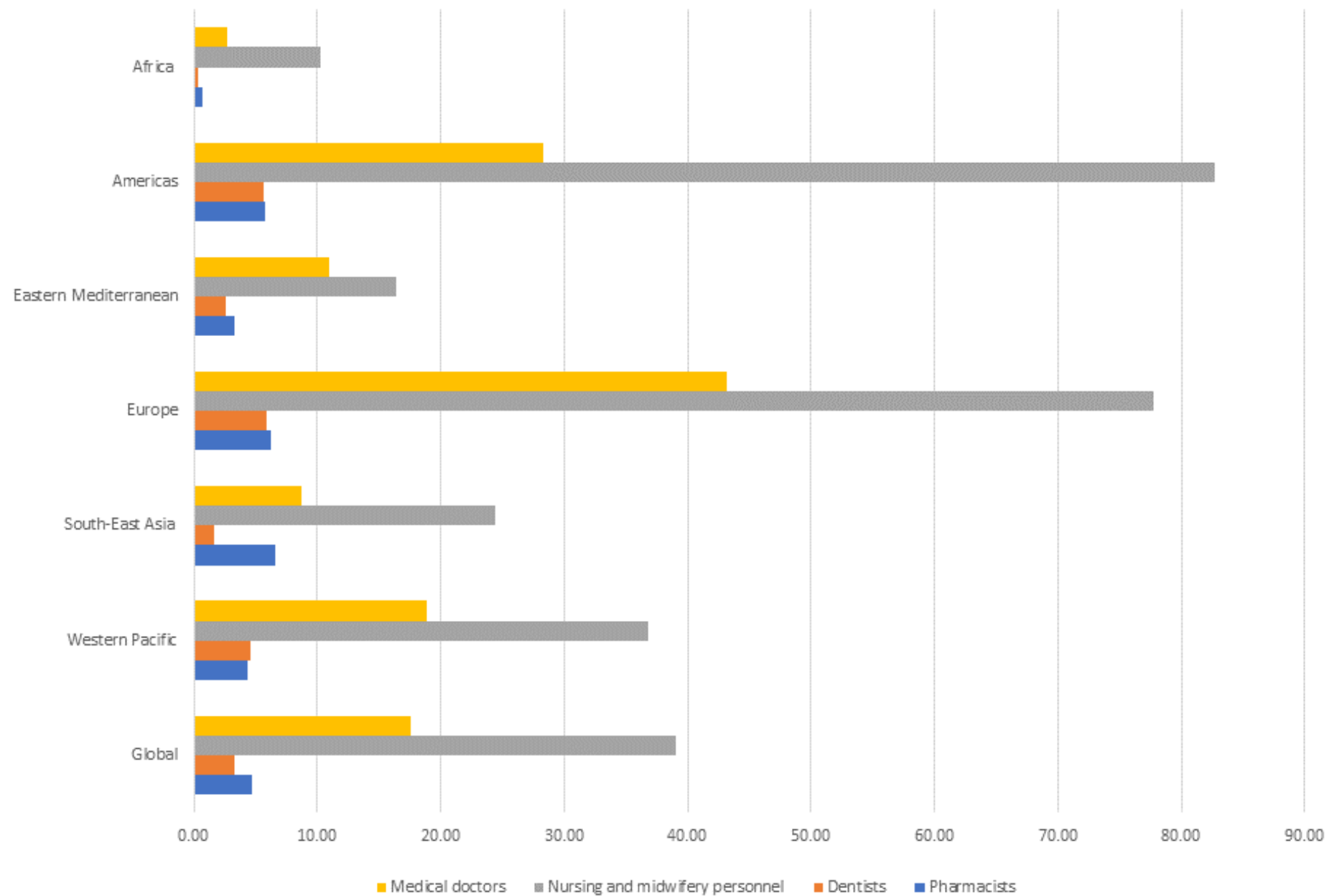
Health care providers (firms) also employ laboratory staff who deliver health care who do not normally have direct contact with patients, and non-clinical staff who do not provide care but may have contact with patients although not in a clinical capacity, for example, receptionists, maintenance staff, administrators, accountants, IT, specialists and managers.



# Global health workforce, by density (WHO, 2006)

WHO Region	Total Health Workforce, (Number, 000s)	Density (per 1000 Population)	Health service providers, (number, 000s)	Management and support staff, (000s)
Africa	1,640	2.3	1,360	280
Eastern Mediterranean	2,100	4.0	1,580	520
South East Asia	7,040	4.3	4,730	2,300
Western Pacific	10,070	5.8	7,810	2,260
Europe	16,630	18.9	11,540	5,090
Americas	21,740	24.8	12,460	9,280
World	59,220	9.3	39,470	19,750

Density of select health professionals per 10,000 population, 2013-2019 (latest available)



# Comparison of health indicators in some selected countries with OECD countries, 2010 (WHO, 2017).

<b>Countries/ Region</b>	<b>Practicing physicians (per 1000 population)</b>	<b>Nurses (per 1000 population)</b>
<b>OECD</b>	3.1	8.7
<b>Japan</b>	2.2	10.1
<b>China</b>	1.4	1.4
<b>Viet Nam</b>	0.7	0.9

# Public and private sector distribution by health worker in China, 2013

Category	Public Sector		Private Sector	
	N	%	N	%
Health workers	8 041 374	82.22	1 739 109	17.78
Health professionals	6 060 885	84.17	1 139 693	15.83
Physicians	2 265 642	81.07	529 112	18.93
Nurses	2 382 003	85.59	401 118	14.41
Pharmacists	339 531	85.83	56 047	14.17
Laboratory workers	340 840	87.75	47 581	12.25
Other health professionals	732 869	87.38	105 835	12.62
Village doctors and assistants	702 737	65.00	378 326	35.00
Other health workers	316 948	88.09	42 871	11.91
Health management workers	357 141	84.84	63 830	15.16
Supportive service workers	603 663	84.07	114 389	15.93

There are socio-demographic variation among healthcare workforce.

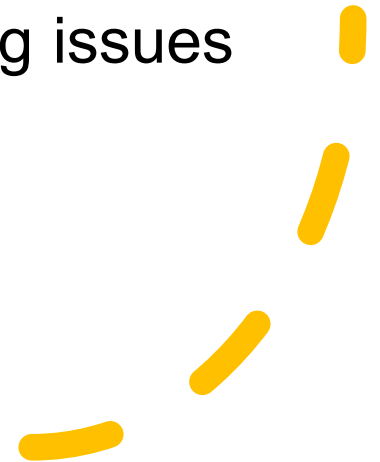
For example, females are seen to work more in nursing profession than males, whereas an opposite scenario is observed in case of doctors.

A variation is also seen in terms of providing services in both formal and informal care sectors.

No unique statistics or data source are available to compare healthcare workforce situation across the world.

# Statistics on healthcare workforce for older adults

- Lack of data available on workers' employment related to healthcare for older adults where cross-country comparison is almost difficult.
- However, it is clear that such statistics are needed to monitor the progress of a country's positive attitude towards challenging issues related an ageing society.



# Training on Healthcare Management

- Workforce needs adequate training of healthcare management for dealing elderly patients.
- This is particularly important during emergency situation as well as pandemic crisis.
- Such training could help providing efficient services as well as save money in health sectors.

# Gerontechnology

- Innovation is necessary to provide better services to older people.
- Social scientists should work with Engineering and IT in order to develop new products which is affordable to elderly in society.
- Adequate training and management knowledge can help to smoothly operating gerontechnology in family, community and societal levels.



# Conclusions

- The healthcare workers were observed to be responsible for the health care service delivery at the three tiers of healthcare facilities.
- Countries need adequate healthcare workforce to provide services to their ageing populations.
- Healthcare workers need management training too to smoothly operating the business.
- Gerontechnology needs patient centric focus to better improve health and wellbeing of older people.
- Without proper management training of staff, it would be difficult to gerontechnology in society.

# Thanks

*Professor Hafiz Khan*

Hafiz.Khan@uwl.ac.uk