

**Health professionals out-migration, magnitude,  
contributing factors and impact: the case of Sudan**

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by

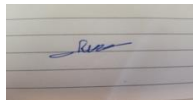
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**Declaration:**

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

The thesis **Health professionals out-migration, magnitude, contributing factors and impact: The case of Sudan** is my own work.

**Signature:**



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## Abbreviations:

AHS	Academy of Health Sciences
ART	Antiretroviral Therapy
DALY	Disability Adjusted Life Years
EMRO	Eastern Mediterranean Region
FMOH	Federal Ministry of Health
GDP	Gross Domestic Production
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GGE	General Government Expenditure
GGHE-D	Domestic General Government Health Expenditure
GNI	Gross National Income
HCWs	Health Care Workers
HRD	Human Resource Directorate
HRH	Human Resources for Health
IDP	Internally displaced person
IHME	Institute for Health Metrics and Evaluation
IOM	International Organization of Migration
KSMOH	Khartoum State Ministry of Health
MoHRD&L	Ministry of Human Resources Development and Labor
MOU	Memorandum of Understanding
MRCP	Membership of the Royal Colleges of Physicians
NHIF	National Health Insurance Fund
OECD	Organisation for Economic Co-operation and Development
OOP	Out of Pocket
SANSA	South African Network of Skills Abroad
SDG	Sustainable Development Goals
SFMOH	Sudan Federal Ministry of Health
SHHS	Sudan Household survey
SHO	Sudan Health Observatory
SMSB	Sudan Medical Specialization Board
SSWA	Secretariat of Sudanese Working Abroad
UHC	Universal Health Coverage
WB	World Bank
WHO	World Health Organization
WHR	World Health Report



## Abstract:

**Introduction:** There was a noticeable high outflux of health professionals from Sudan in the last 10 years. It was a hot topic in the media and public health forums. Yet, there was not enough information about this phenomenon, its implications and its management.

**Objective:** The objective of this study was to analyze the magnitude, trends, destinations, contributing factors, and consequences of health workforce out-migration from Sudan. And give recommendations to the Sudan Federal Ministry of Health and relevant stakeholders to address its negative impacts.

**Method:** A literature review of published and unpublished studies was done. The findings were analyzed using the "push, pull, stick and stay" conceptual framework by Paradath et al., 2003

**Results:** The study found that the number of health professionals outflux is on the rise and dominated by males. Physicians are the highest of migrators followed by nurses, pharmacists and dentists. Top destinations are KSA, Gulf countries and Libya. There is also a trend for western migration to Ireland and UK. The major push factors were the economic situation of Sudan and its implications on wages, health system and life quality besides pursuing higher education. The pull factors were the opposite. The stick and stay factors were related mostly to social and economic conditions. Migration has positive implications like remittances, new experience and knowledge transfer by those who come back. It has also negative consequences like the deterioration of the quantity and quality of health services, medical education and training in Sudan.

**Conclusion and Recommendations:** The outmigration is on the rise and needs urgent intervention. The recommendations of this study were about improving migration database and retention policy development. It also recommended: Bilateral agreements, diaspora integration and resources mobilization for Sudan's health workforce.

**Keywords:** Sudan, Out-migration, retention, Health workforce.

**Words count:**10.936

## Introduction:

I'm a dentist who graduated from the National Ribat University from Sudan in 2013. After that, I obtained a master's degree from the University of Medical Science and Technology. I have five years of experience in different managerial and technical public health positions.

Throughout my clinical and public health experience, I noticed that there was a very high turnover of the staff mainly due to leaving the country. There were very high deterioration of the provided health services and longer waiting time. This was especially true for highly specialized health facilities. It was starting to get more noticeable after the separation of Sudan from South Sudan in 2012.

There was an economic shock for the country after losing half of its revenues which used to come from oil. A lot of debates about the brain drain and brain gain in the public health forums and media in the country were raised.

As a public health professional who knows how important the workforce is for improving health outcomes and universal health coverage. And from my awareness with the potential consequences of this phenomenon if not managed. I decided to carry out this research.

I believe that health is a right for everyone, and no one should be left behind. The absence of qualified health workforce and the unbalance in their numbers might increase the inequity.

From all what is mentioned above, I decided to carry out this study. My main objective was to analyze the magnitude, contributing factors, and consequences of health workforce out-migration from Sudan. I wanted to come with recommendations for the Sudan Ministry of Health and the relevant stake stakeholders on how to manage it. And have a piece of evidence for policy development for health professionals out-migration.

# **Health professionals out-migration, magnitude, contributing factors and impact: the case of Sudan**

## Chapter 1: Background:

In this chapter, there will be a background of Sudan to help the reader understand the context of the country.

### 1.1. Geography

The Republic of Sudan is a country located in the northeastern part of Africa. And bordered by Egypt, Libya, Chad, Central African Republic, South Sudan, Ethiopia, Eritrea and the Red Sea. Sudan occupies land area estimated by 1,886,068 km<sup>2</sup>. Which makes it the third-largest country in Africa. It used to be the largest country in Africa before the separation of South Sudan in 2011 (2).

### 1.2. Demography

In 2018 Sudan population was estimated at 41,801,533, distributed evenly males to female's ratio. People in the working-age constituted 78.8% of the total population (3). The life expectancy at birth in the same year was 65 years (4). Sudan is predominately rural. It's occupied by 65% of the rural population compared to 35% living in the urban side (5). Sudan is highly diverse consist of 597 tribes speaking 400 dialects and languages. Islam is the dominant religion in Sudan and the Arabic Sudanese is the major language spoken (6).

### 1.3. Economic context:

Although Sudan is a country that is rich with natural resources, it is categorized as a low-income country. The Gross Domestic Production (GDP) of Sudan was estimated by US\$ 18.902 billion in 2019 (7). The Gross National Income per capita was US\$ 1560 in 2018 (8). Half of the Sudanese are living below the poverty line. There is also high disparity and inequity between the rural and urban areas in terms of development and service provision (9). Sudan was among the fastest global growing economies in 2010, despite the international sanctions imposed on it. But after the separation of South Sudan in 2011 the country lost the oil revenues which constituted about half of the country revenues and 95% of its exports (10).

### 1.4. Political background

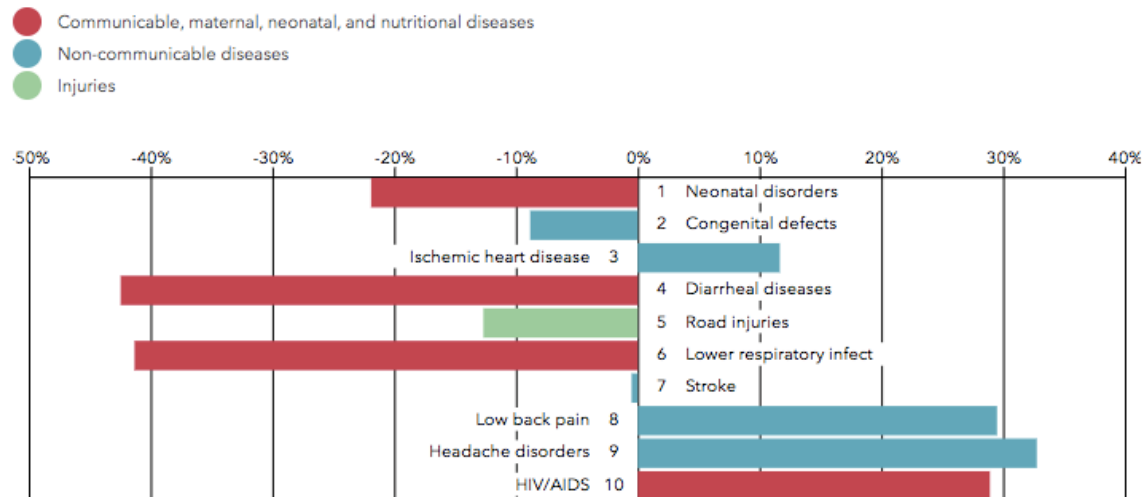
After thirty years of military dictatorship ruling, Sudan made a revolution that drove out the military regime. During the ruling period of this regime, Sudan separated into two parts in 2011 (11). Furthermore, due to the former government practices, Sudan has "one of the worst humanitarian crises" as it was called by the UN (12). The number of internally displaced people IDP and refugees was over 1,8 million people in greater Darfur in western Sudan and about 200,000 refugees into Chad. Which created a massive burden on the health system of the country (13).

### 1.5. Epidemiological profile:

Sudan is frequently facing natural disasters like floods, droughts and heavy rains. Highly resembling the other countries in the sub-Saharan African context, the burden of communicable diseases, malnutrition and outbreak hazards remain very significant. The social determinants of health also play a significant role in the occurrence of emerging and reemerging diseases. According to Sudan Household survey SHHS in 2012 the main cause

of death in Sudan due to Chronic disease was Hypertension with 31.5%. While with the acute diseases almost half of the patients were dying due to diarrhoea (42.4%), followed by acute respiratory diseases (25.3%). The number of cases of non-communicable diseases is on the rise due to changes related to socio-economic status, urbanization and lifestyle change (14). According to the Institute of Health Metrics and Evaluation (IHME), in 2017 the top causes of death and disability combined in Sudan were: Neonatal disorders and Congenital defects. Although their rate has been declining, they were still the top two. Ischemic heart disease ranked as the third cause and was rising by about 12% between 2007-2017 (1). See figure (1).

## What causes the most death and disability combined?



Top 10 causes of disability-adjusted life years (DALYs) in 2017 and percent change, 2007-2017, all ages, number

**Figure 1: Top 10 causes of Disability-adjusted life years (DALYs) in 2017 and percentage change, 2007-2017, all ages, number (1).**

### 1.6. Health system governance

Sudan has a decentralized Governance health system. The Health system consists of three layers. The first layer is the federal level, which is responsible for policymaking, strategic plans development, international relations and HRH capacity building. It's also responsible for technical and financial support for the state level. The 2<sup>nd</sup> layer is the state level. It's responsible for planning and health services delivery for the secondary and tertiary level. Technical and financial support for the locality level is also provided at this level. At the third layer, the locality level is responsible for managing the primary healthcare and providing community and environmental health services. This is the theoretical hierarchy. But when it comes to practice things don't go as planned. As the federal level is contributing to implementation instead of planning and policymaking, while the state level is busy in service provision with minimum support to the locality level. Also, the lack of leadership, poor control on resources and weak managerial capacity are the problems dominating the scene, especially at the locality level. The fragmentation of health policy system is a prominent feature in Sudan. Policies are developed at different levels with minimal to no coordination between different actors; this could be most noticeable between the Federal and state level. There is also weakness at the implementation of accountability frameworks despite their presence at the federal level, but they are usually absent at the state and locality level, this is also usually accompanied by a scarcity of financial and human resources (15).

### 1.7. Health finance:

According to the World Bank (WB), Sudan Total expenditure on health in 2017 as a percentage of the GDP was 6.3%. Meanwhile, Domestic General Government Health Expenditure (GGHE-D) as a percentage of General Government Expenditure (GGE) (%) at 2017 was 8.3% (16). Which is below what Sudan pledged at Abuja declaration for spending at least 15% out of the GGE (17). According to the Sudan health accounts country report (2015), private sources contributed to 83% of current health expenditure in Sudan. The Out of Pocket (OOP) expenditure constituted 79% of this number. And 1.7% was paid from other partners. Meanwhile, public sources funded 14.95% of THE, a decline of 15% when compared to 2008. The hierarchy of the funds flow between different levels in the health system is complex (figure 1). The charge of user fees is done at all levels through OOP when you are not covered by health schemes or copayments in case of insurance coverage. Sometimes this user fee is exempted or waived but there are no clear guidelines for eligibility criteria. The main contributors for health financing are Sudan Ministry of Health (SMoH), National Health insurance fund (NHIF), Armed forces, OOP and international donors (18). See Table (1).

**Table 1: Sudan health expenditure indicators in 2015**

Category	SDG	\$US
Country's total GDP, 2015	589,391,828,916.34	96,621,611,297.76
GDP per capita, 2015	15,334.67	2,513.88
Current Health Expenditure (CHE) 2015	29,424,694,450.0	4,823,720,403.28
THE as % of GDP	5.3%	
Per capita health expenditure	807.13	132.3
Total GHE	4,398,451,270.0	721,057,585.25
GGHE as % of GDP	0.75%	
GGHE as % of CHE	14.95%	
GGHE as % of GGE	7.2%	
Household OOP expenditure as % of CHE	79.4%	

Source: Sudan Health accounts 2015

### 1.8. Health workforce:

Although Sudan has above 180 educational institutes, 35 of them are specialized in medical education (19). Yet it has a critical shortage of health workforce as classified by the WHR 2006 (20). The weakness of governance system accompanied by a shortage of data due to impaired information system resulted in poor planning for the health workforce and no room of implementation of interventions (21). The biggest share of the health workforce in Sudan is for nurses and midwives. They constitute together 42.95 % of the total percentage of the health workforce. Followed by technicians 15.84% and Doctors 15.19%. The least represented category is the dentists forming only 0.93% of the total health workforce in Sudan in 2011 (22). See Table (2).

The number of health graduates in Sudan is equally distributed between men and women. But highly maldistributed between geographical locations in Sudan (23). And the later participation in the labour market is dominated by men constituting about 75% of the health sector workers (22).

**Table 2: Number of the health workforce in Sudan.**

<b>Category</b>	<b>No.</b>	<b>% of health workforce</b>	<b>Density per 1000 population</b>
Doctors	11 735	15.19	0.36
Dentists	718	0.93	0.022
Pharmacists	1108	1.43	0.034
Medical assistants	8043	10.41	0.25
Midwives	13 885	17.97	0.42
Nurses	19 308	24.98	0.59
Health visitors	1190	1.54	0.036
Nutritionists	1917	2.48	0.059
Technicians	12 245	15.84	0.37
Environmental health workers	7131	9.23	0.22
<b>Total</b>	<b>77 280</b>	<b>100.00</b>	<b>2.36</b>

Source: Federal Ministry of Health, 2011c.

## Chapter 2: Problem statement, Justification, Objectives, and methodology:

This chapter contains the problem statement, justification why the study should be carried out, the objectives of this study and the methodology used, including the conceptual framework.

### 2.1. Problem Statement:

According to the World Health Organization (WHO), health workers are “all people engaged in actions whose primary intent is to enhance health” (24). This includes all the contributors who have a major role in the provision of promotive, preventive, curative and rehabilitative health services (25). Health workers are one of the cornerstones for health systems sustainability, improvement of health outcomes(20) and achievement of Universal Health Coverage (UHC) (26). They also affect the provision, development and quality of healthcare services(27),(28). The availability and deployment of healthcare workers in low-middle income countries are affected by a global trend of migration. According to the World Health Organization (WHO), the international migration of the health workers to the Organization for Economic Co-operation and Development (OECD) countries has increased by 60% in the last decade (29). The top destination countries of this international migration of health workers are the United States of America (USA), Germany and the United Kingdom (UK) (30). There are about 60 million health workers around the globe, but they are not evenly distributed and missed most in the countries where their demand is the highest, especially in low-income countries(31). The peak of this shortage manifests itself in Sub-Saharan African countries. These countries suffer from 24% of the global burden of the disease. They are obliged to fight it with 1% of the global financial resources and 3% of the health workers (20). This shortage reason has two sides. On the one hand, it is related to the poorly planned input in the forms of training and recruitment. On the other hand, there is output leakage like retirement attrition and migration (32). According to the WHO, 36 countries out of the 57 countries that have critical shortage are Sub-Sharan African countries (20). For achieving the Sustainable Development Goals (SDGs), the density of Health Care Workers (HCWs) should be a minimum of 4.45 doctors, nurses and midwives per 1000 population (24). In 2018 although the number of HCWs in Sudan was escalating it reached to only 28,1 Doctors and 33.5 nurses per 100,000 population (33). On top of that, there is a huge maldistribution where 70% of HCWS are concentrated in urban areas serving only 30% of the country population (23). There is a high production of health care professionals in Sudan, due to the big number of medical schools. Sudan has above 180 educational institutes, 35 of them are specialized in medical education. But, because of the poor planning, there is a discrepancy in their numbers, resulting in overproduction of some categories and shortage in others. The weakness of governance system accompanied by a shortage of data due to impaired information systems resulted in poor planning for the health workforce and no room for the implementation of interventions (21). Also, there is a high in and out-migration of specific health professional’s groups like doctors, pharmacists, nurses and midwives. They migrate from the public to private sector, rural to urban and from Sudan to other countries. While other groups like public health officers have a high unemployment rate (34).HCWs out-migration is one of the major contributors to HCWs shortage. It was estimated that 800 medical graduates out of 3000 in Sudan are lost yearly due to out-migration (35). The migration trend is physicians led but also other categories like pharmacist, dentists, nurses and midwives are highly contributing to this outflux. (15) .

### 2.2. Justification:

HCWS out-migration from Sudan can be linked to seeking better salaries and quality of life. Some may also migrate to gain a better education, training, job opportunities and for security reasons. Despite the recent effort of the ministry of health in collaboration with the ministry of finance for developing a retention policy to reduce the out-migration rate, there is still no unified policy for addressing the outmigration challenge (15). The

recruitment agencies which are private bodies that could be sometimes national or coming sent from a different county have played a crucial role in increasing the shed of HCWs. This is especially true for the gulf area as the income of physicians could reach 20 times the income of a physician in Sudan. The loss of high numbers hasn't only affected the quality and quantity of healthcare services in primary healthcare facilities, but it mostly affected the tertiary level. The effect appears also in the rural areas as an impact of the replacement of the out-migration doctors working at urban areas by the rural. Furthermore, a lot of training and education programs had to reduce their intake capacity and some of them had to stop due to the lack of expertise trainers out-migration. Although the remittances and the circular migration which is the cyclic movement between source and recipient country, can both bring to the country more technical experience. The brain drain continued to be a major headline in the news and hot topic for debate at forums (36),(35). The future of health workforce out-migration could be a major threat to the national health system function in Sudan if not managed in a proper way (37). Few studies have been made earlier around the topic (35), (38). Due to the new political and economic situation of Sudan, there is a high need for making an update on the topic of out-migration from Sudan to develop recommendations for managing this phenomenon. Thus, a thorough analysis of the magnitude, determinants, contributing factors, consequences and the best practices of HCWS will be carried out in this paper.

### 2.3. Objectives:

#### 2.3.1. General Objective:

To analyze the magnitude, contributing factors, consequences of health workforce out-migration from Sudan, and the policy response to this phenomenon, to advise on policies to address it.

#### 2.3.2. Specific Objectives:

1. To describe the magnitude, trends, characteristics and destinations of health workforce out-migration from Sudan.
2. To identify the push, pull, stick, and stay factors affecting the health workforce out-migration from Sudan.
3. To analyze the impacts of the Sudanese health workforce out-migration.
4. To review implemented policies in Sudan, and best practices from elsewhere addressing health workers out-migration.
5. To give recommendations for the policymakers for how to deal with health workers out-migration from Sudan.

### 2.4. Methodology:

#### 2.4.1. Search strategy:

This study was conducted based on a literature review from published and unpublished academic literature, grey literature and the author's experience about the Health workforce out-migration from Sudan. The search was based on the search engines like google, google scholar for finding relevant information. The catalogues of online libraries, as well as databases like VU library, Cochrane, Pubmed, and EMBASE were used. Specific Websites like WHO, World Bank, IOM, ILO, UNICEF and UNDP, PERUEA statistics observatory were consulted. National websites like SFMOH and Sudan Health observatory SHO were used. Besides, reports, surveys, national policies were utilized. The time frame of the online searched literature was for all the relevant published articles between 2000-2020. The snowball technique will be utilized where opportune. Due to the limitation of data in Sudan in the Health workforce out-migration, articles from neighbouring countries were searched and utilized. The literature search was done in both English and Arabic languages. English was the major language for search, while Arabic was used for the



accessibility for the national reports and grey literature that is available only in the Arabic language. This was further translated back to English and used in this paper.

The following Keywords for literature search have been used alone and in combination: "Migration", "Health workforce", "Africa", "low-middle income countries", "retention", "human resources for health", "determinants", "push factors", "pull factors", "Sudan", "remittances", "Retention", "Diaspora", "policies", "Medical Education", "

#### 2.4.1.1. Targeted population:

By health professionals in this study we mean: Doctors, Dentists, Pharmacists, Nurses and Midwives.

#### 2.4.1.2. Limitations of the study:

1. There were no data about the numbers of health workers out migration from Sudan in the last five years, previous years data were used.
2. The quantity and quality of articles in Sudan was not comprehensive drawing evidence. Thus, the literature of countries with similar context was utilized.
3. although the time frame of the study is the last twenty years, very few studies before that were used due to their importance.

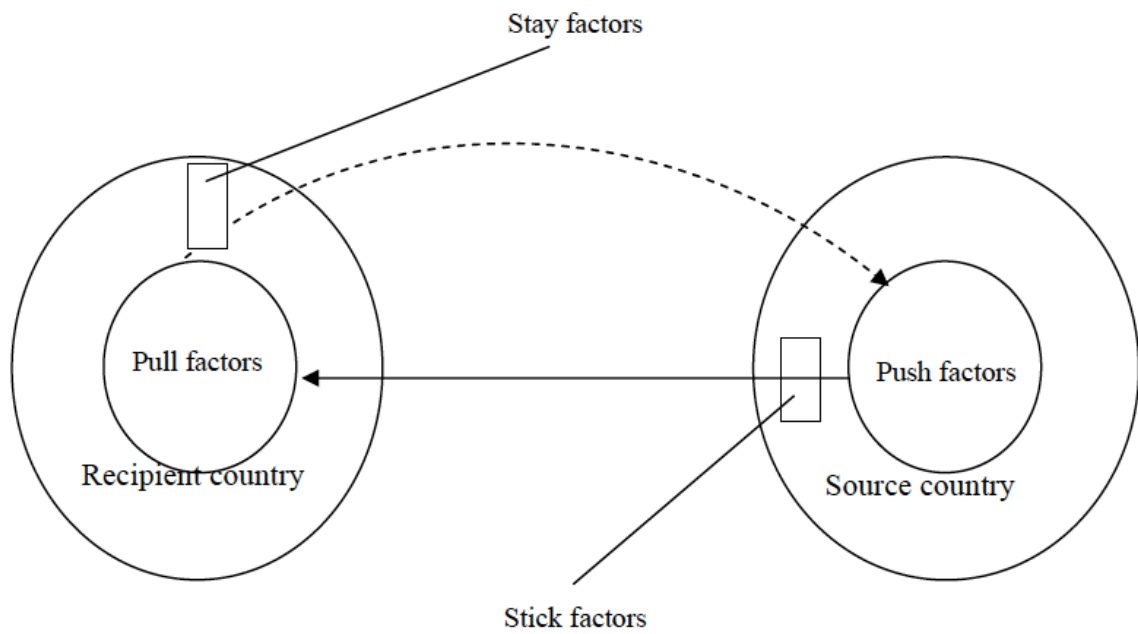
#### 2.4.2. Conceptual Framework:

The "Factors influencing health personnel availability and distribution" model (figure 2) was adopted from Padarath et al., 2003 (39). It was selected to be used in this study. This diagram represents the factors that determine the health workers movement and migration between countries. The focus of the diagram is the interrelation between the push, pull, stick, and stay factors affecting migration between the source and recipient country. These factors could be further broken down into personal, social, socio-economical, professional, security factors, etc. Also, the framework takes into consideration the production of healthcare workers from the medical institutions and their natural attrition for other reasons beside migration like career shift or retirement. The reason for selecting this framework is that it looks into the migration big picture and the factors that affect the net flow movement and even the production and natural attrition of the HCWs. Other frameworks like "Complex drivers of migration: macro-, meso- and micro-factors" (40) and "The migration matrix of Eichenbaum (Eichenbaum 1975 p 24)" (41) have been reviewed as well. But "Padarath et al., 2003" was chosen due to its simplicity and better alignment with the author's objectives.

#### 2.4.3. Consideration points at framework analysis:

- Push factors are the unfavourable conditions in the source country enhancing the outflow of HCWs to the recipient country.
- Pull factors are the factors that attract the HCWs to travel from the source country to the recipient country.
- Push and pull factors interrelate and interact with each other. In 1981 the WHO stated that: "*no matter how strong the pull factors are of the recipient countries, migration only seems to result if there are also strong push factors from the donor country*" (42).
- Push and pull factors are further subdivided into exogenous and endogenous factors in their relation to the health system (43).
- Stick factors are the factors that force or motivate people to stay in their home country regardless of the presence of push factor.
- Stay factors are the factors preventing the movement back to the source country from the recipient country.

**Figure (2): Schematic representation of factors associated with health workers migration**



Source: Adopted from Paradath et.al, 2003 (39)

## Chapter 3: Magnitude, characteristics, destinations, contributing factors and impact of health professionals out-migration from Sudan

In this chapter we will talk about the size, trends of health professionals out-migration from Sudan and the characteristics of these migrants. We will also search the top destination for this outflux and analyze the factors contributing to this phenomenon and the consequences it has on personal lives, Sudanese health system, and the Sudanese society at large.

### 3.1. Magnitude and trends of health professionals out-migration from Sudan:

Sudan has a weak health information system. As a result of this, there is no database with updated and accurate numbers about out-migration. It is only scarce, fragmented information from limited sources, even explicit studies made about the phenomenon are few.

Different estimations have been reported in public forums and media ranging from very high to very low numbers which were linked to the noticeable health professionals frequent leave of the country (38). In this study, the data have been extracted from three different sources cited by two studies for comparing and contrasting between them.

One of the sources where data about this phenomenon could be obtained is The Secretariat of Sudanese Working Abroad (SSWA). This is a governmental body responsible for contracts validation and providing permission for out-migration from Sudan. It keeps records of numbers of Sudanese abroad based on their occupation and provides services for the diaspora when they visit Sudan. But they have been criticized for the inaccuracy of their socio-professional data. In 2010, there were 749,000 Sudanese registered in SSWA. They consisted of recruited health professionals and those who already travelled to the recipient country and still seeking jobs. About two-thirds of the registered Sudanese working outside were low skilled workers (75%). Yet, high skilled labour like health professionals, academic teachers and engineers had significant representation. In Table (3) below you will find the Sudanese health professionals registered by SSWA in 2010. The registry was dominated by men representing 73% of the total health professionals compared to only 27% of women. General practitioners were the highest category constituting half of the registered health professionals and medical assistants were the least category forming 175 out of 12312 health professional in 2010 (22). There were no data on nurses or midwives or dentists in this Table, thus other resources were consulted.

**Table (3): Sudanese health professionals registered by SSWA in 2010.**

<b>Category</b>	<b>Total</b>	<b>Men</b>	<b>women</b>
Medical Specialists	999	76.2%	23.8%
General practitioners	6545	74.2%	25.8%
Medical assistants	175	74.3%	25.7%
veterinarians	931	60.5%	39.5%
Pharmacists	909	70.6%	29.4%
professors	876	83.6%	16.4%
Associate and assistant professors	579	71.5%	28.5%
lecturers	1298	68.9%	31.1%
<b>Total</b>	<b>12 312</b>	<b>73.0%</b>	<b>27.0%</b>

Source: Secretariat of Sudanese Working Abroad (SSWA) (22)

Table (4) below is illustrating the migration numbers, professions and destinations recorded at SSWA of Medical doctors, pharmacist, dentists, nurses and other health professions categories from 2008-2012 and their top destination countries. Out of the total registered 5487 health professionals, Medical Doctors numbers were the highest numbers

4231, Followed by the non-categorized other health professions 644, Nurses were ranked the third forming 434, and dentists were the least representing only 43.

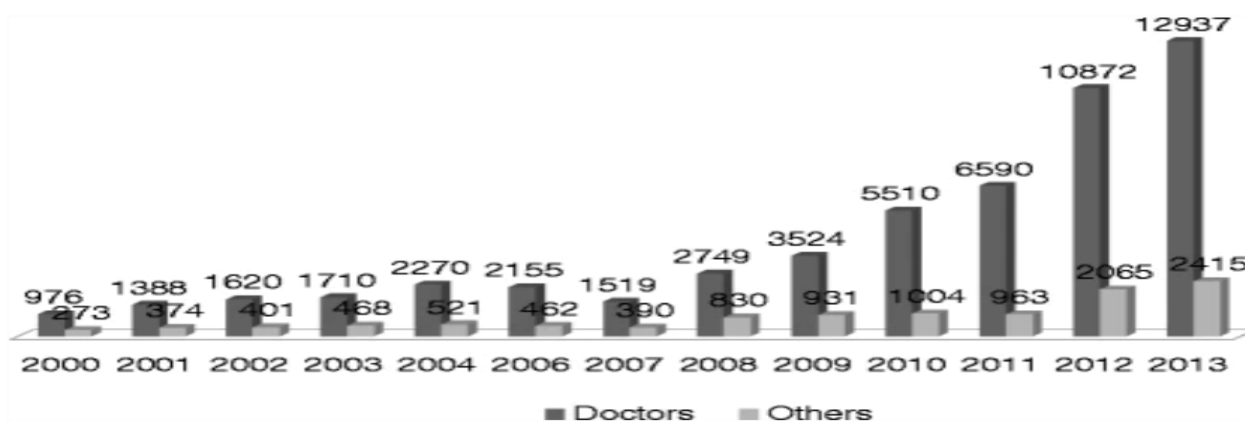
**Table (4): Total number of health professionals that departed the country and country of destination [2008-2012].**

Profession	KSA	UAE	Libya	Oman	Qatar	Bahrain	Kuwait	Multiple	Egypt	UK	Malaysia	Total
Medical Doctors	3953	113	71	83	5	1	2	0	1	1	1	4231
Pharmacists	116	10	2	3	3	1	0	0	0	0	0	135
Dentists	38	3	1	0	0	1	0	0	0	0	0	43
Nurses	244	11	34	0	2	0	142	1	0	0	0	434
Other Health	534	70	22	8	3	1	5	0	0	0	1	644
Total	4885	207	130	94	13	4	149	1	1	1	2	5487

Source: SSWA records [2008-2012] (38)

Evidence of the rising number of out-migration from Sudan, is the number of documented experience certificates from the Documentation and Experience Certificates. This Certificate is issued upon request. It's usually requested for signing new job contracts in other countries as proof of experience. The number of the issued certificates have been rising steadily during 2007-2013 as shown in figure (3). And the number of doctors who documented their certificates increased from 976 to 12937 between the years (2000-2013). When compared to an increase from 273 to 2415 over the same years from other professions, Doctors have the highest share. (38)

**Figure 3: NO. of documented experience certificates from the Documentation and Experience Certificate Office at the Human Resource Directorate HRD between 2000-2013.**



Source: Documentation and Experience Certificate Office records [2000-2012]

Table (5) reports the number and Eastern Mediterranean countries destinations of migrated Sudanese doctors between 2008 -2012. According to the records of the Ministry of Human Resources Development and Labour (MoHRD&L) as cited by Abuagla 2013 (38). The total number of Doctors migration in this five year was 5028. The top destination was KSA.

**Table 5: Migration among doctors to Eastern Mediterranean countries 2008-2012**

Year	KSA	UAE	Qatar	Kuwait	Oman	Libya	Other	Total	% Increase
2008	331	4	1	-	2	-	-	338	-
2009	444	13	1	1	10	-	2	471	39.3%
2010	1261	26	1	1	6	-	2	1297	175.4%
2011	1276	11	-	-	15	-	-	1302	0.3%
2012	1118	25	1	2	47	426	1	1620	16.2%
<b>Total</b>	<b>4430</b>	<b>79</b>	<b>4</b>	<b>4</b>	<b>80</b>	<b>426</b>	<b>5</b>	<b>5028</b>	

Source: MoHRD&L (38)

Table (6) reports the number and trends of migrated Sudanese pharmacist, dentists and nurses that travelled between 2008 -2012. According to the records of MoHRD&L as cited by Abuagla 2013 (38), The total number of migrants was 1450 over the five years. The highest migrating category was nurses 417, followed by pharmacist 169 and the least migration category were dentists with a total of 30 during the five years.

**Table 6: No. of migrating dentists, pharmacists, nurses, other health professionals [2008-2012]**

Profession	Year					Total
	2008	2009	2010	2011	2012	
Pharmacist	43	15	24	2	85	169
Dentist	15	6	8	1	0	30
Nurse	90	33	12	14	268	417
Others	215	97	138	252	132	834
<b>Total</b>						<b>1450</b>

Source: MoHRD&L (38)

### 3.2. Characteristics of health professional's outmigration from Sudan:

#### 3.2.1. Category:

Out-migration of health professionals from Sudan was usually limited to doctors and nurses but recently there was outflux of different categories of health professionals that can hinder the health system performance (38). As shown in Table (4) when comparing different categories of health professions migration, it was dominated by medical doctors representing 77.1%, followed by 11.7% other health categories, 7.9% nurses, 2.4% pharmacist and 0.7 for dentists. In the records of MoHRD&L at Table (5) and Table (6), Medical Doctors were the highest migrating category. Followed by the uprising trend of Nurses outflux and the least migrating were dentists.

#### 3.2.2. Gender:

The Health workforce in Sudan is almost equal in numbers of gender distribution (23). But when it comes to out-migration men usually dominate the scene. As shown in Table (3),

the number of registered Sudanese health professionals at SSWA were 73% men compared to only 27% women. This result was contradicted by a study report that, between the years 2010 – 2013, the Ministry of Health of Saudi Arabia recruited 4200 physicians. Among these 49% were Females (38). This contradiction could be due to the preference of recruitment of female health professionals by KSA.

### 3.3. Destinations of health professionals out-migration from Sudan:

There is a discrepancy in the numbers between different sources but there is a consensus on the KSA as the top destination between all the mentioned sources and the rising trend for western out-migration to Ireland, UK, USA and Germany.

#### 3.3.1. KSA and Arab countries.

KSA is thought to be the highest recruiter for Sudanese health professionals. The number of registered doctors at the recruiting agencies for travelling to KSA was 3000 in the period from 2009-2011 (44). The evidence from SSWA at Table (4) shows that the top destination for health professionals in 2010 was KSA (89%). Followed by UAE (3.7%), Kuwait (2.7%) and Libya (2.3%). In Table (5) the records from MoHRD&L KSA was also the top destination followed by Libya and UAE between 2008-2012. In addition, as mentioned by Ayaat et. al (22), according to the National human resources for health annual report Khartoum in 2011, it was estimated that 3500 doctors migrated to KSA. The Libyan Arab Jamahiriya has also signed contracts with more than 600 health professionals.

#### 3.3.2. Ireland and UK

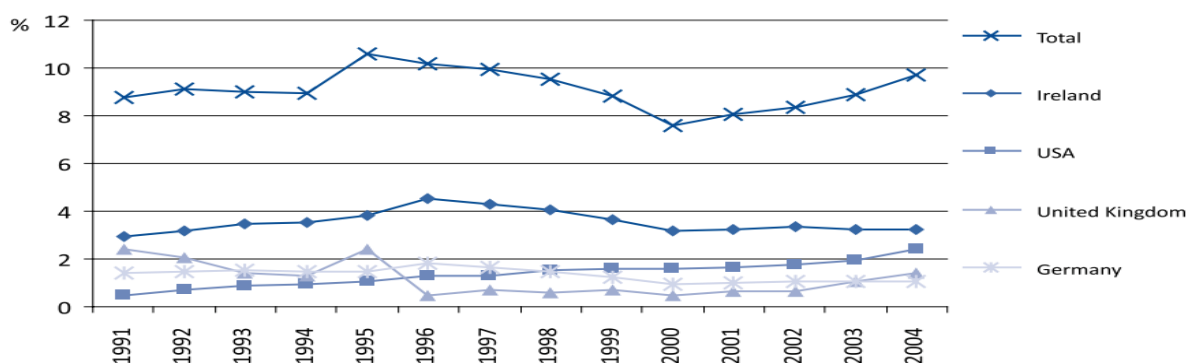
In 2007 Sudanese doctors constituted 5% (564) of the total number of doctors from sub-Saharan Africa in the UK (45). According to the IOM 2011, there is a high presence of Sudanese physicians in the United Kingdom, Ireland, and the United States of America (46).

Another paper reported increased migration to Ireland and UK where there is approximately 3000 Sudanese physician (47).

#### 3.3.3. Other Western Countries

The International Organization of Migration IOM estimated the average of physicians out-migration from Sudan at 9% of the Sudanese physicians trained in Sudan between 1991-2004. They are mostly presented in Ireland, UK and USA (46). See figure (4)

**Figure 4: Stock of physicians in western countries as a percentage of physicians trained in Sudan.**



Source: IOM

### 3.4. Contributing factors:

#### 3.4.1. Push and pull factors:

##### *3.4.1.1. Economic:*

Economic factors can play as both push and pull factors. On the one hand, it is acting as a significant push factor for out-migration of Sudanese health professionals outside Sudan since 1970 and till today (44). Especially since Sudan is going currently under sharp escalation in the inflation rate. It was estimated at 136.36% in June compared to 114.23% in May (48). This has led to downgrading Sudan for a lower-middle-income country category to low-income country according to the WB. The GNI/Capita/\$ in Sudan was reduced to 590 on July 1, 2020, compared to 1,560 on July 1, 2019 (49). The overall bleak economic situation of Sudan has a direct impact on the health sector. It's affecting policy implementation related to the expansion of health services and health professionals recruitment (22). This is accompanied by the low remuneration in Sudan compared to the other countries in the region. Gulf countries can remunerate up to 20 times the salary of the physicians in Sudan which can play as a strong pull factor for their side (50). A cross-sectional study was made among 82 Sudanese community physicians working in the ministry of health in Sudan for the assessment of job satisfaction. The level of dissatisfaction was 65.4%. The main reason for dissatisfaction was the low salary (51).

##### *3.4.2.2. Social:*

The social network can also play as a strong pull factor in the provision of information and facilitating migration especially for Sudanese communities in western countries. A study has shown that 41% of the migrants to US in 1997 have taken their decisions and got the information for migration from their social network (52). They help each other with the provision of steps of migration, living conditions and sometimes even temporary hosting.

##### *3.4.2.3. Employment:*

Despite the shortage of the number of HRH in Sudan, the labour market has a weak capacity in absorbing the needed number for health workers. The reason for this is linked to both the demand and supply sides. The health workers are mostly in the public sector, accounting for 62% of the total employed and 34% in the private sector. The remaining 4% is distributed between Military, police, university and voluntary sections. The jump of the number of medical schools in Sudan from 4 to 28 in 2006 due to the "revolution of higher education" initiative, the number of medical doctors graduates jumped from 400 to 1400 and then to 3000 per year this wasn't aligned with the absorbing capacity of the major employer FMOH. Also, maldistribution is very severe in the country. Health professionals are concentrated in urban areas while Sudan is 70% rural (53). Which means they are competing over the limited number of jobs. Besides, the author has observed the available vacancies are all short-term contracts according to the health facilities needs and budgets. This highly affects job security. All of these factors have affected the employment rate and conditions, especially among fresh graduated medical doctors, and played as a push factor (22).

##### *3.4.2.4. Recruitment Agencies:*

The recruitment agencies play a vital pull factor and accelerated the health professionals out-migration from Sudan. The number of active recruitment agencies has been rising in the last decade. Their number increased from 10 agencies in 2010 to 400 agencies in 2013. Although they play a positive role in facilitating the agreement between health professionals and recruiters especially in the gulf area, many cases of fraud and misconduct have been reported and had a negative effect on their customers (22). This

further aligns with the reports showing that 4000 Medical doctors were registered between 2007-2010 with recruitment agencies to travel to KSA. (44).

#### *3.4.2.5. Working environment:*

The poor work environment can both play as a push and stay factors. As it was shown that health professionals were migrating due to the poor working environment (38). A cross-sectional study made in 2017 for the assessment of job satisfaction among 94 medical and house officer doctors in River Nile state in Sudan showed that more than half (50.9%) were not satisfied with their jobs and the major reason for this was due to poor working condition according to (27%) of the study population (54).

#### *3.4.2.6. Political:*

Political factors can play as a push factor. Due to the highly oppressive nature of the former government in Sudan. To be a part of an opposing political party could sometimes endanger your safety. There is a lot of medical professionals who are also activists and belongs to opposing political parties to the former government. In fact, they were a major contributor to the protests to the former government. Hence, they would be sometimes about their safety and would tend to leave the country (38). Also during the time of civil war, many people were worried about their safety and moved out of the country (46)

#### *3.4.2.7. Education:*

Evidence has shown that lack of opportunities for career development and receiving specialized training can play as a push factor for health professionals out-migration (38). There is a high demand for postgraduate studies in Sudan. This is especially true for physicians, due to the limited and poor opportunities for general practitioners. Thus, this can contribute to the push factors of out-migration. Because of this, there is a high rush into specialization among physicians. After the formation of the Sudan Medical Specialization Board SMSB in Sudan in 1995, the postgraduate specialization training of the doctors was exclusive to it and no longer done under universities. The specialization in Sudan was taken from the universities and moved to SMSB which is the exclusive body responsible for health professional's specialization since 1995. Health professionals can either pay Privately or by a scholarship from the FMOH. During the time 1995-2004 more than 407 doctors have undergone their specialization. When we compare this number to the 1983 doctors who were sent from the FMOH by a scholarship to SMSB between 1995-2001, and who were supposed to finish specialization by 2004, we will find that the pass rate didn't exceed 21%. This percentage is low even when compared to international exams like the Membership of the Royal College of Physicians (MRCP) where the pass rate for 2003 was 46%. This has a direct effect on doctors travelling and seeking postgraduate specialization opportunities outside Sudan (35).

#### *3.4.2.8. qualifications equivalency:*

The assessment of qualifications can be one of the significant factors that health professionals planning to migrate would Consider. This has played as a strong pull factor for KSA and Ireland. They consider the Sudanese bachelor's in medicine and the internship year in Sudan as equivalent to their bachelor's degrees and internship year. Thus, Sudanese doctors don't have to do further examinations. For Ireland, they just need to do an English proficiency test (55), (56).

### *3.4.2. Stick and stay factors:*

#### *3.4.2.1 Basic needs:*

This can play as a stay factor when migrants want to go back to their country of origin or source country, they need to secure enough money before they go back to Sudan. So, they can have what they refer to as "basic needs". This is usually the essentials for



settlement like owning houses, education for their children and enough backup money for securing basic life needs while they find a job and considering the low remuneration of jobs in Sudan (57). Interruption of children education can also be an obstacle when planning to go home.

#### *3.4.2.2. Economic:*

The economic Situation can play a significant stay factor when health professionals want to go back to their source country. A study has shown that medical diaspora reported that their desire to go back home but faced with low remuneration in Sudan hinders there plans for going back (57).

#### *3.4.2.3. Political:*

The former political situation in Sudan used to play as a stay factor. Due to the high political oppression of the former government and that a lot of healthcare workers, especially physicians are politically active in Sudan and A study has shown that 19% of the medical diaspora was intending to go back to Sudan when the political situation changes (57).

#### *3.4.2.4. Poor working environment:*

The Poor work environment can act as a stay factor preventing migrants from going back to their source country. A study about the Sudanese medical diaspora has shown that one of the significant obstacles of their return to Sudan was the poor working environment due to the poor health management and the lack of standardized guidelines, policies and standards (57).

#### *3.4.2.4. Qualifications & relocation cost and requirements:*

The cost of qualifying that suites the destination country and the relocation cost can act as stick factors. For Instance, the qualification exams in the US is relatively expensive with a low success rate. A study has shown that the Sudanese who took the United States Medical Licensing Examination (USMLE) between 1998-2012 had an average success rate in three exams by 69.8% (58). The cost of the three exams is about \$ 3500 US, apart from travelling and living expenses while taking the exams (59). Yet, this varies between different countries.

#### *3.4.2.5. Language barrier:*

The language can be a real obstacle when travelling to Western countries. Sudan official language is Arabic. Countries like Ireland asks for English proficiency exams with high scores for international health practitioners registration into their council. (60). The language can be a barrier for integration into the society, communication with patients and being eligible to work abroad. Thus, act as a stick factor.

### *3.5. Impact of Healthcare workers out-migration from Sudan:*

#### *3.5.1. Positive impact:*

Out-migration of health care workers has always been referred to as a negative phenomenon. It's usually found linked to professional's loss under the brain drain umbrella and its undesirable effect on the health care system of the country of origin. But lately, some evidence started showing that it can have a positive impact. It can contribute to the development of the source country of the migrant (61). When Sudanese health professionals travel, they acquire new knowledge and skills from the Recipient country.

When they go back to the source country, they will transfer this set of knowledge and skills which contributes highly to the overall development of the health sector (38). Remittances are also one of the basic possible benefits of health professionals out-migration from Sudan. Remittances are the amount of money that a migrant send back to his source country for relatives (62). The personal remittances constituted 2.2% of the total GDP of Sudan in 2019 and were estimated US\$ 208 million (63). However, there is no data available about the exact amount of the personal remittances sent exclusively by health professionals.

### 3.5.2. Negative impact:

Despite the out-migration positive impact, we can't deny its negative impact. The out-migration can affect the quality and accessibility of the healthcare services in Sudan. The number of health professionals in Sudan is reducing in a way affecting the health system performance (38). Due to the out-migration, it was reported in 2005 that 37% of the outreaches were out of service due to staff shortage (64). Author have noticed that due to the absence of practised medical senior staff, junior staff are recruited in rural areas to work solely. The migration of highly skilled health professionals also diminishes the quality and quantity of the provided medical education and training programs provided in Sudan. in addition, there is a loss of leadership that might affect in shaping the country future. This also means losing mentors for the next generations which will result in less capacity future generations due to the loss of mentorship (38). There is also substantial financial loss over the training of migrated doctors. When we compared the money spent on training one medical doctor in Ghana and Nigeria, it was estimated by \$20,000 and US\$30,000 respectively (65). Putting into consideration the fee for private medical school in Sudan which is estimated by \$2000 per year (66). And that students need five years in Sudan to graduate from medical school, it means the country is losing about US\$ 10000 per each migrated medical doctor. There are also implications for the patients waiting time. At 2002 there were only 2 available neurosurgeons at the National Neurosurgery Centre for undergoing spinal surgery. Thus, the operation waiting time was 6-12 months. Meanwhile, twelve Sudanese neurosurgeons working outside Sudan (35).

## Chapter 4: Applied policies and best practices.

In this chapter, we will talk about the developed and applied policies for managing the health professionals out-migration in Sudan. then we will preview the best practices applied in other countries.

### 4.1. Sudan policies for health professionals out-migration management:

There is no unified policy until now in Sudan for health workforce retention. Yet some initiatives have been launched for an attempt to mitigate the effect and control the high outflux. There was an initiative for the formation of migration supreme council headed by the vice-president of Sudan. this was going simultaneously with the effort for developing a strategy for migration control using evidence-based research. On a qualitative study by Abuagla 2013 for strategies suggestion for retention mechanisms; health professionals mentioned higher remuneration to improve their quality of life and deliver their children a good quality of education. Professional development was also an important aspect for them and the provision of both financial and non-financial incentives. They also wanted opportunities for training and specialization both nationally and internationally. To accomplish this, they recommended higher investment in the health sector and evidence-based policies development. For migration management, assisted circular migration was suggested; government help health professionals for temporary migration meanwhile securing their positions and ensure maintaining enough number of health professionals in the country and do this in rotation manner. The last suggestion was advocacy for loans and financing schemes for health professionals for starting their own private clinics and acquiring the types of equipment they need could be a win/win situation for the strengthening the health system and retention of health professionals (38).

#### 4.1.1. Khartoum State Ministry of Health (KSMOH) experience:

A program was launched KSMOH in 1999. It started after the contact from the State Minister of health with a transplant surgeon in UK. In the developed visiting program, the transplant surgeon came to Sudan regularly and stayed for three months to perform renal transplant surgeries in Ahmed Gasem Renal centre which is affiliated to KSMOH. The program was advocated by the political leadership. It progressed for four years, in which 62 renal transplants were done and described as good as scoring a 93% survival rate after one year. This surgeon with the help of his team that contains nurses from UK who has further contributed to building the capacity and providing training and guidance for Ahmed Gasim Renal centre staff. As a result, the local staff of the hospital started performing the surgery exclusively since 2003 in a rate of 1-2 operations per week. After the success of this experience, the visiting program was further applied to the other two renal centres in which capacity building took place as well (35).

#### 4.1.2. National service:

One of the used retention mechanisms was National service. It's a compulsory year where medical students are obliged to serve at the country after their graduation and after doing their internship year. The government encourage health professionals to go to rural areas through offering the completion of the service in less time when it's done at rural or hardship areas. This was accompanied by a policy banning medical doctors out-migration without the signed approval of their supervisors during the national service year.

#### 4.1.3. Bilateral agreements:

After three years of continuous negotiation, Sudan medical Specialization board SMSB was successful in signing a bilateral agreement with the top two destinations of Sudanese health professionals which are Ireland and Saudi Arabia, Although the agreement was signed, the implementation wasn't satisfactory and health professionals out flux remains unmanaged (37). There are no published details about what the bilateral agreement entailed exactly and were the results.

##### 4.1.3.1. KSA:

As mentioned earlier, KSA was the top destination country for health professionals out migration from Sudan. The contracts were usually signed through private recruitment agencies while leaving the health professionals vulnerable to fraud and leave the government out of control of the health professionals outflux(38). Thus, it was mandatory to establish a form of agreement. After three years of continuous negotiation with KSA at 2009 agreement for labour movement between the two countries that guarantee social protection and labour's welfare was signed (67). In an attempt to control the migration flow the agreement included: provision for training for Sudanese residents in KSA, short locum schemes for specialists and establishing connections between Sudanese and Saudi Arabian's institutions (47).

##### 4.1.3.2. Ireland:

There is above 3000 Sudanese health professional working in UK and Ireland. Due to this, Sudan negotiated and successfully signed a bilateral agreement with Ireland. The agreement was aiming for facilitating training Sudanese health professionals in Ireland, to mobilize the Sudanese diaspora in Ireland and for building institutional collaborations between the two countries. The agreement was in the form of short locum sending for medical doctors who are doing their Specialization. And continuous education development through Irish experts in Sudan (47). There is no available data about the exact numbers of health professionals and activities that took place through this agreement.

#### 4.1.4. Sudan human resources for health observatory:

After the establishment of the International global code of practice on the international recruitment of health personnel. The National Human Resources for Health Observatory Which was already established for coordination between health professionals' stakeholders and act as a database for health professionals took into consideration migration issues as one of its priorities. As the National Human Resources for Health Observatory was the official national body for migration data and reports. Thus, it placed great interest in the evidence of out-migration to fulfil its responsibility as the guardian of the human resources information system. Sudan was one of the eight pioneer countries in the Eastern Mediterranean Region (EMRO) who assigned national authority for the role. And among the three countries who reported to the WHO on migration (68). The major role of the observatory is to connect all the relevant stakeholders and collect data that helps to generate evidence for policymakers (69).

#### 4.1.5. Diaspora Integration:

There were many trials in diaspora engagement and make use of their skills and willingness for contribution and volunteering. The Sudan Medical Specialization Board signed an agreement with the Secretariat of Sudanese Working abroad for Diaspora mobilization for Training, capacity building and experience sharing for the health professionals in Sudan (47).

#### 4.1.6. Incentives:

In another attempt for health professional's retention, higher salaries, free children education, job promotion and transportation were offered by the government of Sudan. But this was offered only for specialized doctors. And it could not be sustainable or generalizable due to the poor investment in health (35). A memorandum of understanding was also signed between Gavi the vaccine of alliance and the Global Fund to Fight Aids and Malaria GFATM in 2014. This agreement was targeting improvement the quality of training for healthcare professionals and the managerial level in the regions that have a deficiency of qualified health professionals like Sudan. It also focused on mechanisms for attraction and retention of health professionals at these regions and HRH strengthening (70), (71).

#### 4.2. Best practices:

##### 4.2.1. International global code of practice on the international recruitment of health personnel:

The global code of practice on the recruitment of health personnel internationally was developed in May 2010 by WHO after the WHO code and was adopted by the world health assembly. This code is voluntary and encourages ethical international recruitment of health workers that leads to circular migration, mutual benefits, agreements between the source and receiving country and transparency. It further discourages the recruitment of health personnel of countries with critical shortage and advocates long term strategic plan for sustaining health professionals and decrease the dependence on health professionals from other countries. The code also advocates for the training of health cadre and equitable distribution for health professionals (72).

##### 4.2.2. Malawi:

Task shifting was one of the tried solutions in many countries at Sub-Saharan Africa and proved to be successful. In the task shifting, Physicians duties are shifted to different levels like nurses and other HCWS, like the administration of Antiretroviral therapy (ART). Malawi was one of the countries which started task-shifting in 2004, Which resulted in the

provision of ART to 130.000 patients through the scheme (73). Many other studies in Sub-Saharan Africa reported the success of this approach in achieving better health outcomes (74).

#### 4.2.3. South Africa:

One of the success stories is the South African Network of Skills Abroad (SANSA) which aims at linking the professionals in the country to the one working abroad in order to develop collaboration for the overall development of the country. The members of SANSA reached to 20200 members from 60 different countries. The percentage of healthcare professionals at SANSA is 18% of the total participant's number. In the next stage, Sansa is planning to mobilize the south African's migrants. The IOM is also helping in coordination of the return of the migrants to their source countries by funds from Governments and International agencies (75).

South Africa employs from the African countries excluding Southern African Development Community, India, North America and Europe. It also has a bilateral agreement with Cuba, Iran and Tunisia for mobilizing medical doctors to South Africa. The oldest and best of these agreements was the one with Cuba. Cuba deliberately trains a surplus number of medical doctors. There is always around 500 Cuban medical doctors working in South Africa. They resemble a strong source of remittance to their country and support its economy by hard currency and taxes taken from this revenue. (76). On the other hand, South Africa has a scheme for training black students who live in rural areas and disadvantaged in Cuba. The number of trainees has expanded from 1200 in 2013 to above 3000 in 2015. These students will be sent to Cuba for attending Medical schools on fully-funded scholarships by the government of South Africa under the condition of returning home and working in the public sector for the same amount of time they were trained which ranges between five to six years. (77).

#### 4.2.4. Indonesia:

In Indonesia, the government assigned Medical doctors, dentists and midwives to a remote area as part of compulsory service for a period of time ranging between 6–36 months. The remoteness of the place determines the duration of the assignment. After 2007 despite that service has become voluntary, health professionals were highly attracted to it. This was due to its high financial incentives and the short period of the contract when you work in remote areas. In 2009 Indonesia Ministry of Health established a new Special Assignment, targeting strategically certain categories which have shortage like: nurses, nutritionists and public health specialists Program in areas with an unmet need (78).

In Indonesia, because of excessive numbers of health training institutes for midwives and nurses, there is an imbalance between the supply and demand especially in the public sector limited positions. This has led to finding them recruitment opportunities abroad through Government to Government (G to G) and Private to Private (P to P) schemes. In the Memorandum of understandings (MOUs) between two governments in the G to G usually. Although the recipient side determines the number and characteristics of the required healthcare workers and the conditions of the recruitment. Yet, the actual number depends on the number of health professionals who can acquire a practising license in the recipient country.

An agreement was signed between Japan and Indonesia, for deploying Indonesian nurses to Japan. The Indonesian Nurses need to have not less 3 than years diploma accompanied by 2 years of experience. Or a nursing bachelor's degree with one-year experience. Before the deployment, Indonesian nurses need to undergo many tests and an interview. The ones who pass this stage should take a six months Japanese language course in Indonesia. Then they will be deployed to Japan. When they reach there, they will take another 6 months advanced Japanese language course. During the advanced course, they start working as a nurse assistant. After that, taking the Kangoshi exam is a must for registration as a nurse in Japan. Nurses who fail to pass will be deployed back to Indonesia. The ones who pass can stay in Japan and have the same benefits and wages as Japanese nurses. The number of Indonesian nurses and HCWs who travelled to Japan through this

scheme between 2008-2011 were 800. Which was half of the negotiated number that agreed upon between the two countries (79)

## Chapter 5: Discussion:

In this chapter, a discussion will be carried out for what was found earlier in the results chapter. It will be divided into five sections in alignment with the study objectives.

### 5.1. Magnitude and trends of health professionals out migration from Sudan:

There are no official records for healthcare workers out migration from Sudan. This is linked to the weak health information system of the country and its weak governance. There is also paucity in the research on the topic. The evidence in this paper about magnitude comes from the SSWA, Documented Experience Certificate Office records and MoHRD&L. Although the primary role of these bodies is not to avail data about health professionals out migration explicitly, yet they can help draw evidence from them. The number of documented experience certificates has been rising steadily between 2000-2013. When we compare the number of documented certificates of doctors to those of other professions, we will find the number of doctors reached 6 folds other professions in 2013. Although there is an increased number of universities in Sudan after the "Revolution of Higher Education". And that medical schools jumped from 4 in 1990 to 28 by 2006 and reached up to 34 in 2012 (22). But the number in Sudan is still below the threshold set by WHO (4.45 doctors, nurses and midwives per 1000 population) for achieving targets of SDGs. The number of physicians per 100.000 population in Sudan was estimated by 28.1 in 2018. While the nurse's number was 33.5per 100,000 population in the same year. When we compare the number of doctors to population in comparison with different sub-Saharan African (SSA) countries the number of doctors and nurses is relatively higher. Out of 47 countries in SSA, Sudan ranked number 14 in the doctors, nurses and midwives density per 10,000 population in 2007 (80). Yet there is still a shortage, maldistribution in the available workforce. There is a discrepancy in the numbers mentioned by SSWA, documented certificates and MoHRD&L But the three sources show consensus on the escalation of the number of outfluxes.

### 5.2. Characteristics of health professional's outmigration from Sudan (category/gender):

Despite the almost equal number of males and females (51% females, 49% males) (23) in the health workforce in Sudan and the increase of the trends of female out-migration, yet males outflux is by far dominating when it comes to out-migration. The migration is physicians lead to KSA. This is linked to the gender constructed roles in Sudanese society of males as the main providers for their families. Also, some women might give up their careers either temporary or permanently after starting a family and delivering children. On the other hand, in the Sudanese culture, it's not preferable that women travel abroad without a male guardian.

When it comes to the healthcare professionals, records of the MoHRD&L, documented experience certificates and SSWA records, all agreed that medical doctors are the highest migrating category of health professionals and the second one and going on the rise are nurses. This could be a real problem because there is still a shortage of nurses in the country. The government of Sudan created the Academy of Health Sciences (AHS) for compensating for this shortage. After the establishment of the AHS in 2006, there were 5 doctors per nurse. In 2011 the number changed to 0,61 nurses per nurse (22).

The money invested in training nurses is going for the benefit of other countries. Pharmacists come next to nurses in numbers ranking. Dentists are the least category to travel between these categories. This could be due to the few numbers of seats available for dentistry colleges in Sudan compared to the above-mentioned health professions. But the demand for dentists is lower globally when compared to nurses and medical doctors.

### 5.3. Destinations of health professionals out migration from Sudan:

The Top destination for Sudanese health workforce migrants is KSA. There are many factors linked to this. The geographical location of KSA makes it a good choice as there is

only the red sea in between the two countries. Thus, it's easy and not expensive to move between the two countries for family visits, holidays and for reaching the country for job searching. Culture and religion also play a significant role. As the two countries are predominantly Muslim and Arabic speakers make it easy for migrants to integrate into the community and communicate with patients. Beside that KSA pay to physicians up to 10 times the salary they get in Sudan and recognize Sudan medical qualification as equivalent. This goes almost the same with the other oil-rich Gulf countries like UAE, Kuwait, Qatar and Oman. There is also a trend of migration to Western countries, particularly Ireland and UK. Ireland recognition of Sudan's medical graduates and internship without further examinations contributed to increasing the migration. The bilateral agreement between Ireland and Sudan also increased the number of Sudanese over there. But the numbers in the western countries, in general, is by less far when compared to Arab countries. This is due to the language barriers, geographical hard accessibility and the tough qualification exams like the USMLE in USA.

#### 5.4. Push and pull Factors:

According to the framework from Pardath et al. 2003 that was used for the analysis of this paper, the push factors are the unfavourable conditions linked to the source country that makes people leave their source countries. While the pull factors are the attractive aspects linked to the recipient country. The major push factor in Sudan seems to be the economic & political situation of the country. Sudan is dedicating 50% of the total government expenditure on health towards the health workforce. This is very close to the expenditure in the EMRO region which is 50.8%. Yet the income of Health workers in Sudan is very low when compared to other EMRO countries (15). Since the separation of the southern part of Sudan at 2011 from the northern part, Sudan has lost oil revenues that constituted half of the country revenues. This pushed the country from low middle income to low-income country in 2020. And it was accompanied by a steep inflation rate making Sudan now the third-highest inflation rate in the world after Venezuela and Zimbabwe (81). This can throw a great burden on the country on how to retain health workers when the adjacent gulf countries can pay them up to 10 times their wages. Besides, it will affect the working environment due to poor infrastructure and lack of resources at public hospitals that are considered as the main employer of health professionals. While in the recipient countries like KSA there is high infrastructure and applied guidelines and protocols at their health facilities. The poorly planned increase of health workers and their concentration in Khartoum made it hard for the health system to absorb the required numbers. This has left many junior health professionals unemployed despite their shortage in the country. The Social and professional network abroad can also play a role in the information provision especially when migrating to western countries where the context and cultures are different from Sudan. Thus, health professionals don't know what to expect and use their network for getting the necessary information. The difficulty in the specialization process in Sudan and low capacity for absorption health workers for specialization have also forced many health professionals to leave the country for pursuing training and specialization chances outside the country. Lastly, there is a remarkable role of recruiting agencies in the acceleration of the out-migration. These agencies are recruiting Mostly physicians for KSA. And it leaves the health workers vulnerable and susceptible to fraud and unethical practices by these agencies.

#### 5.5. Stick and stay factors:

On the counterpart of the push and pull factors, there is the stick and stay factors. This represents the conditions that hinder people from leaving the source (stick) or returning from the recipient country (stay) when they want. Stick factors are related to the source country while the stay factors are related to the recipient country. Sudanese that didn't leave Sudan even that they wanted to migrate, where staying for taking care of elder parents. This is especially true for a very collective society like Sudan where family bonds come before individual achievements and the societal stigma of leaving parents in need of care. Another stick factor was the language and qualifications cost especially when



migrating to western countries. It's not easy to integrate into western society even after crossing the language barrier.

When it comes to the stay factors Sudanese health professionals were worried about the employment chances. Also, low wages and interrupting children education upon going back were obstacles. This is again directly linked to the economic situation of the country and the low allocation of money for health. The former political situation also played a significant role at hindering health workers from going back to Sudan especially for the ones opposing the former ruling political party. After the Sudanese revolution, many of the Sudanese highly specialized health professionals started coming back and offered their help for strengthening and reforming the health system.

#### 5.6. Impact of healthcare workers outmigration:

Like most of the phenomena, there are both, a bright and dark side for health professionals out migration from Sudan. On the one hand, migrant health professionals can contribute to the development of the country when there is a circular migration.

They can also be a source of remittances which can support the overall economy of the country.

Sudanese expatriates tend to make their financial and monetary transfers to Sudan through unofficial channels and the black market because the official exchange rate in the Central Bank of Sudan differs from the black-market exchange rate, which encourages them to send their money via the latter. This, in turn, leads to a hard currency shortage and an increase in its demand, hence causing a depreciation of the local currency and hyperinflation in the national economy (82). This remittance although they are supporting families, but they are increasing more economic destruction of the country in the long term.

On the other hand, the absence of health professionals especially highly skilled ones is affecting the quality and quantity of the provided health services. There is also a loss on money and resources invested on the trained health professionals when they travel abroad. Also, there is a deterioration in the quality and quantity of the training and educational programs in Sudan due to this loss. There should be a balance between the two sides and trying to make use of the advantages and mitigate the effects of disadvantages.

#### 5.7. Applied policies and best practices:

There is no unified retention policy for health professionals outflux in Sudan till now. Some initiatives have been done to mitigate the effect of the consequences of out-migration. The visiting Doctor initiative was a successful example. It can further be replicated and expanded especially recruiting health professionals who are willing to volunteer for developing the country. Another form was two bilateral agreements between Sudan-KSA and Sudan -Ireland. KSA Is the top destination for Sudan's health professionals and circular migration between the two countries is inevitable. Thus, applying such an agreement will impose some control over the numbers and ensure gaining the rights of Sudanese health workers in KSA. The same goes for Ireland. There was no enough information about the bilateral agreement and numbers of those who travelled through them. Yet, it was reported that implementation wasn't satisfactory. Further analysis of the two experiences and reforms can have a promising result. This can be implemented like the Cuba- South Africa agreement. Especially that health labour market is unable to absorb all the fresh medical doctors' graduates in Sudan. The Sudan health observatory can also establish connections with the other bodies that have data about migration and start research on the issue and suggests possible solutions. The Diaspora integration through SSWA can be very successful when compared to SANSA at south Africa experience. Yet, it is important to ensure its sustainability and to expand the coverage of the pool of diaspora. Finally, the task-shifting case of Malawi can be applied in Sudan. Especially in rural areas that are suffering from in-migration as a result of out-migration. Some duties can be shifted to nurses and community health workers. But we need to ensure first the capacity building of these HCWs and quality assurance of the services they provide.

## Chapter 6: conclusion and recommendations:

### 6.1. Conclusion:

In The last years, the outflux of Sudanese health professionals has been on the rise. The highest out-migrating category was the medical doctors followed by a trend of the rising number of nurses out-migration. Men health workforce are leaving the country higher than women. The presence of recruitment agencies accelerated the out-migration especially to KSA which is the top destination. Followed by other gulf countries like UAE, Oman, Qatar and Kuwait. There is also a trend for migration to western countries like Ireland, UK, Germany and USA. Many factors can affect the out-migration dynamics. The dominant push factors were the economic situation, low remuneration, unemployment and higher education. On the pull side, there were high salaries in recipient countries, social and professional networks that provide information and the good work environment. The stick and stay factors were mostly related to securing enough money before going back to Sudan. And the barriers of having elderly parents to stay within Sudan can be a stick factor forbids leaving the country. There are both positive and negative implications of the health professionals outflux from Sudan. Migrants can help in developing Sudan and providing new knowledge and skills. They also provide remittances to the country. But this outflux can also result in negative aspects like health care workers shortage and loss of the money the country invested in their training. And the unavailability of enough highly skilled health professionals, resulting in patient's longer waiting time.

### 6.2. Recommendations:

- Establishing partnership through health observatory for data collection from the different bodies that have data related to the out-migration of healthcare workers. Collecting these data for analysis of healthcare workforce outmigration magnitudes, trends, characteristics, destinations and using them for the formation of retention policy for out migration.
- Encourage further research about the determinants of healthcare migrations.
- Establish Bilateral agreements with the top destination countries and study the experience of former bilateral agreements to see how it can be further improved.
- Control the recruitment agencies and organize their work under the ministry of health governance.
- Opening channels for health professional's diaspora who can train and mentor health professionals in Sudan.
- Resources allocation and investment in healthcare workforce training, development and increasing their remuneration.
- Advocate Remittances flow through official channels, taking earmarked taxes from these revenues and allocate them to health workforce development.
- Encourage task shifting in rural areas to nurses and community health workers after ensuring their capacity building.

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