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Sustain and Retain in 2022 and Beyond

THE GLOBAL NURSING WORKFORCE AND THE COVID-19 PANDEMIC

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Contents

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Executive summary

Purpose of the brief

The brief focuses on the nursing workforce at a time when a global pandemic is raging across the world. The year just ended—2021— has seen unprecedented damage inflicted on health systems and on the nursing workforce. The year just begun—2022— marks no change in the continuing relentless pressure of the pandemic on individual nurses, and on the global nursing workforce.

This brief was commissioned by the International Centre for Nurse Migration (ICNM). It provides a global snapshot assessment of how the COVID-19 pandemic is impacting on the nursing workforce, with a specific focus on how changing patterns of nurse supply and mobility will challenge the sustainability of the global nursing workforce. It also sets out the urgent action agenda and global workforce plan for 2022 and beyond which is required to support nurse workforce sustainability, and therefore improve health system responsiveness and resilience in the face of COVID-19.

COVID-19 and its impact on nurse supply

- The global nursing workforce was estimated in 2019-20 as being 27.9 million nurses.[1]
- Prior to the pandemic, the global shortage of nurses was estimated at 5.9 million nurses; nearly all of these shortages were concentrated in low- and lower middle-income countries. The pandemic has exacerbated the existing nurse supply shortfall and has forced rapid and “emergency” policy responses to try to increase nurse supply, at the system level, in all countries.
- There is a growing evidence base on pandemic impact, both on the personal level (stress, workload, infection risks, demands made of nurses to “cope” and be “resilient”, and concern about “moral injury”) and on the implications of the system responses (re-deployment, new responsibilities, access to PPE, etc.).
- The pre-pandemic shortage of nurses has been exacerbated by the impact of the pandemic. Burnt out nurses are leaving employment or taking absence.
- If only an additional 4% of the global nursing workforce were to leave as a result of pandemic impact, then the increased outflow of nurses would be more than one million; this would push the global nurse shortage estimate up to seven million.

- Each health system and country should conduct periodic nursing workforce impact assessments, to provide alerts to pandemic related damage being done at the level of individual nurses, the overall nursing workforce, and health care systems.

Self-sufficiency and nurse supply

- The pandemic has increased the immediate need for nurses in all countries and will further ramp up demand over the next few years.
- Many countries must focus on increased supply of "new nurses", both to meet growing and changing demand created by the pandemic, and because of reduced current supply.
- There is huge variation in the relative size of new supply of nurses from domestic training, across the high- income countries of the Organization for Economic Co-operation and Development (OECD).
- Many low- and middle-income countries entered the pandemic with inadequate supply of nurses.
- There is emerging evidence of increased active and "fast track" international recruitment by some high-income OECD countries, which could undermine the ability of some "source" countries to respond effectively to pandemic challenges.
- The pandemic has heightened the risks associated with international recruitment: cutting across international supply to some high income "destination" countries, in the short term, whilst driving up "push" factors and likely outflow from low-income "source" countries.
- There is a growing policy emphasis on the potential of government- to- government bilateral agreements to "manage" international recruitment of nurses – these agreements must be independently monitored to assure full compliance by all parties.
- There is an urgent need to monitor trends in international recruitment flows using a self-sufficiency index which can flag how reliant countries are on international inflows, and how the patterns of flows and impact are changing.

Retain to Sustain: Burnout and reduced nurse retention during the pandemic

- The COVID-19 pandemic has been a major disruptor of nurse retention and contributes to increased burnout and related risks of higher nurse turnover.

- Employers must respond to nurse burnout and retention challenges because they have a duty of care for their workforce, and because it is in their own interests.
- Any pre-existing nurse understaffing and resource limitations have been exposed and amplified by the pandemic, and have added to the stress and workload of the nurses who are at work. In addition, the pandemic has directly impacted on nurses as people — they have suffered higher than average incidence of infection, illness, and mortality rates.
- Analysis of the impact of the pandemic on nurse retention is growing, with extremely worrying findings. There will be reduced nurse retention because of COVID-19 driven ill health, burnout, reduced working hours and early retirement, which will exacerbate existing nurse workforce shortages.
- Employers and organisations must take responsibility and provide supportive conditions, and policy interventions should be focused on improved work environments; ensuring adequate staffing levels; and providing attractive working conditions, pay and career opportunities.
- One vital policy intervention that will improve retention, and will demonstrate that employing organisations are supporting their staff is to ensure that nurses have priority access to full vaccinations.
- Sustained success in improving nurse retention is likely to be related to planned, sequenced, multi- policy intervention – so called “bundles” of linked policies, rather than single interventions.
- Identifying the most effective balance of policies to improve retention of nurses is in part about taking account of the pandemic impact, experiences and motivations of the nurses. This is why a nurse workforce impact assessment approach is an important underpinning of effective nurse workforce retention and sustainability.

An Action Agenda and Plan for 2022, and Beyond: Recommendations for sustaining and retaining the nurse workforce during the COVID-19 pandemic

The nursing workforce has been central to COVID-19 response effectiveness in all countries. This brief highlights that the effects of COVID-19 are increasing the demand for nurses, but are also having a damaging direct and indirect effect on individual nurses, and on overall nurse supply. There was a global nurse shortfall of almost six million as the pandemic hit in early 2020. COVID-19 has exposed the vulnerabilities of nurse supply flows, domestically and internationally. At the time of publishing this brief in January 2022, it is all too evident

that the latest Omicron variant is surging around the globe, and having further severe impacts on an already understaffed and overstretched global nursing workforce.

The growing risk is that COVID-19 is driving up significantly the pre-pandemic 5.9 million global shortfall of nurses, and may also increase the unequal distribution of nurses, and push up international flows of nurses from low/middle-income countries to high-income countries. This will undermine both country-level progress towards rebuilding after the pandemic shock, and could prevent the attainment of universal health coverage in some countries, as well as compromising the overall global response to the Omicron variant and any future pandemic waves.

To mitigate these damaging effects, and to improve longer-term nurse workforce sustainability, there is an urgent need for effective and co-ordinated policy responses both at national level, and internationally. This response must include both immediate action to meet the urgent challenges set out in this brief, and the development of a shared longer-term vision and plan for the global nursing workforce, to ensure that the world is better placed in the future to meet major health shocks.

At country level:

- **Act: Commitment to support for safe staffing levels.** Based on consistent application of staffing methods, necessary resource allocation, and health system good governance;
- **Act: Commitment to support for early access to full vaccinations programmes for all nurses;**
- **Act: Nurse workforce impact assessments, conducted regularly** in order to generate evidence and develop a better understanding of pandemic impact on individual nurses and the overall nursing workforce;
- **Plan: Reviewing/ expanding, the capacity of the domestic nurse education system** which should be based on data generated from impact assessments and from a regular and systematic national nurse labour market analysis;
- **Plan: Assessing/ improving retention of nurses and the attractiveness of nursing as a career**, by ensuring that the damaging effect of COVID-19 burnout of nurses is addressed, and by the provision of fair pay and conditions of employment, structured career opportunities, and access to continuing education;
- **Plan: Implementing policies to enable the nursing workforce contribution to pandemic response to be optimised** through supporting advanced practice and specialist roles, effective skill mix and working patterns, teamworking, and provision of appropriate technology and equipment, as well as training in its use;

- **Plan: Monitoring and tracking nurse self-sufficiency** by using the self-sufficiency indicator of level of % reliance on foreign-born or foreign-trained nurses.

At international level, key stakeholders must act now, and also develop and agree on a vision and long-term plan for sustaining the global nursing workforce:

- **Act: Supporting an immediate update of the State of the World's Nursing (SOWN) analysis.** As we enter the third year of the pandemic, there is an urgent need for an updated global profile of the nursing workforce to assess the damage done and the scope for targeted action on sustainability and renewal;
- **Plan: Commitment to support for early access to full vaccinations programmes for all nurses, in all countries.** International co-operation is required to protect the nursing workforce in all countries;
- **Plan: Commitment to implementing and evaluating effective and ethical approaches to managed international supply of nurses, through a collective approach framed within a fuller implementation of the WHO Global Code of Practice on the International Recruitment of Health Personnel.**[2] This must focus on improved monitoring of international flows of nurses, independent monitoring of the use of country- to-country bilateral agreements and recruitment agencies to ensure compliance, and with fair and transparent recruitment and employment practices;
- **Plan: Commitment to supporting regular and systematic nurse workforce impact assessments,** particularly in resource constrained countries, by the provision of technical advice, data improvement, independent analysis, and multi-stakeholder policy dialogues to agree priority policy actions on domestic nurse supply and retention;
- **Plan: Commitment to investing in nurse workforce sustainability in small states, lower income states and fragile states, most vulnerable to nurse outflow, and impacted by the pandemic,** by building on the lessons of the UN High Level Commission on Health Employment and Economic Growth,[3] and of the WHO Strategic Directions on Nursing and Midwifery which demonstrate the long-term economic, social and population health benefits of investing in the nursing workforce.

Act and Plan. There is need for both urgent action and a shared long-term vision and plan for the global nursing workforce. The COVID-19 pandemic has caused unprecedented damage to the global nursing workforce and is already creating additional harm in 2022. Without sufficient well motivated and supported nurses, the global health system cannot function. A

co-ordinated policy response at country level and internationally is urgently needed to meet the 2022 Action Agenda and to develop a longer-term plan: to improve nurse retention and give hope for the future sustainability of the profession.

1. Introduction

This brief focuses on the nursing workforce at a time when a global pandemic is raging across the world. The Omicron variant of COVID-19 is the latest to impact on population health, challenging – and in some places overwhelming – health system capacity, and adding even more pressure on the global nursing workforce. On the final day of 2021, it was reported that "Twenty countries spanning four continents have reported record-breaking numbers of COVID-19 cases in the past week, highlighting the strain that Omicron is exerting on the health systems of rich and poor nations".[4]

One immediate impact of Omicron has been to increase rapidly the level of staff absence as a result of infection or self-isolation. For example, in England in the last week of December 2021, it was reported that one in ten of National Health Service (NHS) staff was absent, with COVID-related absence having increased by 62% in just five days, including 19,143 nurses and midwives and 2,120 doctors.[5] Similar reports are emerging from other countries such as Canada,[6] the US,[7] and Australia.[8] This has led to urgent attempts to call in staff on leave, temporary staff and additional volunteers, and fast track further international recruitment of nurses, but has also meant that some services are suspended because of staff shortages.

As we enter the third calendar year with COVID-19 as an ever-present threat, this brief looks back, in order to set out the way forward for 2022. It provides an agenda for action and argues for a global nurse workforce plan that will be vital to protect and support the nursing workforce, so that nurses can protect and support population health.

The year just ended—2021— has seen unprecedented damage inflicted on health systems and on the nursing workforce. The year just begun—2022— marks the continuation of relentless pressure of the pandemic on individual nurses and on the global nursing workforce. It is vital that 2022 is also characterised by concerted immediate and longer action nationally and globally to sustain the nursing workforce. Without this action, the existing worldwide nursing shortage gap will grow significantly, undermining any health system attempts to respond effectively to, and build beyond, the pandemic.

This brief was commissioned by the International Centre for Nurse Migration (ICNM). It provides a global snapshot assessment of how the COVID-19 pandemic is impacting on the nursing workforce, with a specific focus on how changing patterns of nurse supply and mobility will challenge the sustainability of the global nursing workforce. It sets out the urgent action agenda for 2022.

The aim is to inform the policy debate on how health systems, countries and international organisations should respond to the vital issue of securing a sustainable nursing workforce against a backdrop of a global pandemic and worldwide nursing shortages. In particular, the brief focuses on supply trends and the retention of the nursing workforce, in order to support workforce sustainability, and therefore improve health system responsiveness and resilience in the face of COVID-19.

The impact of COVID-19 on the nursing workforce has been severe and pronounced across the world. Nurses are at the frontline of the response to the virus, are central to any successful progress in suppressing it, and will be the mainstay of the recovery of post-COVID-19 health systems. The International Council of Nurses (ICN)[9]and others have highlighted this critical connection[10] which has been widely acknowledged but has come at a terrible cost.

Many nurses have died, many more have fallen ill, often because of poor provision of personal protective equipment (PPE) and inadequate access to vaccine, and many others are experiencing heavy and long-term workload, work related stress and burnout. Recent World Health Organization (WHO) global estimates[11] are that about 115,500 health care workers have died because of COVID-19, but this is acknowledged to be a "conservative" figure, because of underreporting and limited reporting coverage.

Whilst the incidence of COVID-19 and its effect on population health has varied in different regions and areas since it first emerged early in 2020, there has been a huge overall impact on nurses and other so-called "front line" workers. Virtually all WHO Member States report pandemic related disruption to health services, and two-thirds (66%) have reported that health workforce-related factors are the most common causes of service disruptions.[12]

Assessing and responding to the impact of COVID-19 on the physical and mental well- being of nurses is an urgent concern and will also have long-term consequences related to mental health and to chronic diseases ("long COVID"), which in turn will have a negative impact on nurse retention; these are critical issues which must be addressed for the sustainability of the nursing workforce. ICN has repeatedly highlighted the need for more effective monitoring of infection rates, mortality and assaults on nurses.[13]

Nurses work across the whole of the health and social care system – in hospitals, primary care, nursing homes, long-term care, occupational health and other locations. They are everywhere where there is a need for care. COVID-19 has also penetrated everywhere in health and care. Whilst much of the media attention on the pandemic impact has been on nurses working in hospitals, this brief acknowledges the need to take a whole system view, and highlights that non-acute sectors have often seen catastrophic impacts of the pandemic,

on patients and on nurses. For example, a recent independent review of international experience with COVID-19 outbreaks in residential aged care facilities[14] (RACF) noted that "Staff shortages, high turnover, inadequate training, low proportions of RNs (registered nurses) and limited government support for IPC in aged care, in many countries, contribute to high rates of COVID-19 in RACFs".

Assessing the global impact of COVID-19 on nurse supply, mobility and sustainability is to examine a fast-moving situation, with a varied and changing background at country level, in different systems and sectors, and using data that always has a time lag, and is often incomplete. This brief does not attempt to examine all the system impact variables in detail or try to paint a comprehensive picture (which is not feasible, given data limitations and glaring data gaps), but it does recognise that these will be significant in determining the sustainability of the nursing workforce, nationally and globally. It also highlights where and how the major nurse workforce data gaps can be filled.

The brief is a snapshot which highlights the necessary main policy actions related to nurse supply and sustainability in the context of the huge and ongoing challenge of COVID-19 and health systems responses. It does so by using data analysis, rapid reviews of studies and documents, media scans and background information from National Nursing Associations (NNAs) and other sources. The development work for the brief was conducted in the latter part of 2021.

The remainder of the brief is in four further chapters:

Section 2 sets the scene, reporting on the critical impacts of COVID-19 on the nursing workforce in 2021.

Section 3 looks in greater detail at nurse workforce supply and sustainability at a time of global pandemic.

Section 4 highlights the major challenge of retention of nurses.

Section 5 provides policy recommendations for actions for 2022 which are required to ensure a sustainable supply of nurses.

2. COVID-19 and its impact on nurse supply in 2021

Key point summary

- The global **nursing workforce** was estimated in 2019-20 as being **27.9 million** nurses.[15]
- Prior to the pandemic, the **global shortage** of nurses was estimated at **5.9 million nurses**, nearly all these shortages were concentrated in low- and lower middle-income countries.
- The pandemic has **exacerbated the existing nurse supply shortfall** and has forced rapid and "emergency" policy responses to try to increase nurse supply, at the system level, in all countries.
- There is a **growing evidence base on pandemic impact**, both on the personal level (stress, workload, infection risks, demands made of nurses to "cope" and be "resilient", and concern about "moral injury") and on the implications of the system responses (re-deployment, new responsibilities, access to PPE, etc.).
- **The pre-pandemic shortage of nurses has been exacerbated by the impact of the pandemic.** Burnt out nurses are leaving employment or taking absence.
- If only an additional **4% of the global nursing workforce were to leave** as a result of pandemic impact, then the outflow would be more than one million; this would push the **global nurse shortage estimate up to seven million.**
- Each health system and country should conduct periodic **nursing workforce impact assessments** to provide alerts to pandemic related damage being done at the level of individual nurses, the overall nursing workforce, and health care systems.

2.1 The profile of the global nursing workforce

The brief builds on recent assessments of the pressures on the global nursing workforce,[16] and is framed by global initiatives, including the report on the "State of the World's Nursing" (SOWN),[17] the global "Nursing Now" initiative,[18] and the recently agreed global Strategic Directions for Nursing and Midwifery (SDNM).[19] A key message that has emerged from these initiatives is that, without effective co-ordinated action, the current global shortages of nurses will constrain many countries from achieving Universal Health Coverage (UHC), and is already undermining the effectiveness of responses to the COVID-19 pandemic.

In 2020, the SOWN report was published.[20] It was the first global picture of the nursing workforce and presented the global pre-pandemic profile of the nursing workforce. It

highlighted significant but varying nurse shortages across the world, which meant that most countries already had nurse supply gaps and faced COVID-19 with an inadequate nursing workforce.

The SOWN report essentially describes the pre-COVID-19 world, using data up to 2019, and is therefore a useful starting point and benchmark for assessment of how the pandemic has impacted the nurse workforce:

- The global nursing workforce was estimated at 27.9 million nurses; nine out of every ten nurses worldwide is female.
- The global shortage of nurses was estimated at 5.9 million nurses.
- Nearly all (89%) of these shortages were concentrated in low- and lower middle-income countries.
- High-income countries had more than three times the nurse graduation rate (38.7 graduate nurses per 100,000 population on average) as did low-income countries (10.4).
- One out of six of the world's nurses was expected to retire in the next 10 years, meaning that 4.7 million new nurses would have to be educated and employed just to replace those who retire; higher rates would be evident in some high-income countries.
- One in every eight nurses practised in a country other than the one where they were born or trained.

In essence, the pre-pandemic world was already short of almost six million nurses, reported huge shortages in some regions, had a growing replacement challenge driven by poor retention and by ageing and retirement of the workforce, and was witnessing a growth in international mobility of nurses. In some countries, there was the added problem of nurse unemployment existing alongside nursing shortages – with countries and health systems reporting nurse shortages but not being able to employ existing nurses because of limited resources or relatively poor pay and career prospects in nurse employment.

Then, in 2020, the COVID-19 pandemic erupted, and spread across the globe. It has had an unprecedented effect on nursing – driving up demand for nurses, who are the critical "front line" health professionals, whilst at the same time cutting across nurse supply: causing death, infection, increased absence and increased leaving rates. It has had a multiplier effect, exacerbating the shortage factors that had already created a global nurse-supply gap before the pandemic, whilst adding huge new pressures at the level of the individual nurse and the health system.

2.2 Surge and Sustain: COVID-19 and the supply of nurses

The timing and impact of the pandemic on the nursing workforce has been variable in different countries, but a core group of challenges has emerged at a global level, and in nearly all countries. For the purposes of this brief, the main nurse workforce supply issues are summarised in relation to the pandemic impact and policy responses. This is presented as a linear process, but the reality is that there have been different successive pandemic waves impacting at different times in different countries. At the time of completing this brief, the Omicron variant is spreading rapidly across the globe, with high rates of infection and adding to the pressures on staff by increasing rapidly the infection rates and related staff absences.

Nursing workforce surge and sustain policy responses are interconnected and have often been cyclical in terms of impact and policy responses. The underlying issue for many nurses has been that this is not a short-term, one-off "acute" episode and challenge – it has become a relentless, intense and continuing drain on energy, morale, and physical and mental health. Nurses around the world were at the front line of meeting the challenge of the Delta variant in 2021 and must now face up to the impact of an additional variant, Omicron.

2.2.1 Surge impact on nurse supply

Countries and systems have had to attempt to rapidly develop "surge capacity" to meet fast and unpredictable increases in demand in health services directly because of the spread of COVID-19. This includes primary health care support, and the rapid scaling up of critical care/ intensive care (CCU/ICU) capacity, often accompanied by reduction or suspension of other elements of acute care provision to "free up" capacity to meet direct pandemic impact on health and care services. A separate but linked issue in some countries was the impact of COVID-19 on nursing and care homes, which have often been less well-supported than hospitals.

Nurse workforce surge supply responses have focused primarily on rapidly increasing ("scaling up") overall nurse workforce capacity and shifting more of that capacity to ICU/CCU and the other high-pressure points of the pandemic. Specific responses included requiring nurses to work longer hours and/ or different shift patterns; redeploying nursing staff from other clinical areas, sometimes with additional training; bringing non-practising nurses back into the workforce as temporary/ voluntary "returners"; deploying student nurses to "front line" work; using temporary/ agency staff; "fast track" integration of international nurses; and integration of refugees with nursing qualifications.[21] [22] [23]

Some countries have also tried actively to stop international outflow of nurses, on the basis that their skills were required "at home". This was additional to the direct impact the pandemic had on disrupting international travel.

Table 1: Surge and Sustain: Critical nurse workforce supply issues during the COVID-19 pandemic

	Main health system challenges	System responses on nurse supply
SURGE	Developing surge capacity Focus on acute intensive care/ critical care Maintaining provision in primary care/ care homes	Extra hours worked/ different work patterns Re-deployment of current staff Integration of returners Student nurses in workforce Fast track integration of international nurses Integration of refugees with nursing qualifications [Prevention of international outflow of nurses]
SUSTAIN	System preparedness for additional waves High/increasing pandemic related nurse absence Deployment of vaccination programme(s) Managing "two track" services – COVID-19/ non COVID-19 Growth in COVID-19 related chronic care ("long COVID"): need for improvements in primary care/ public health	Nurses deployed/trained to deliver vaccine programmes Increase flexible deployment of nurses Reduce/ end use of short-term/ volunteer returner nurses, or integrate into permanent workforce Support return of "front line" student nurses to their education Provide cover and relief for burnout/ nurses with ill health Retraining/additional training of some nurses Increase use of digital/technology support Increase supply of new nursing staff, focusing on those with intensive care, public health and primary care skills, and clinical specialist nurses/ advanced practice (in some countries this includes use of international recruitment)

Sources: Key information provided by NNAs. Additional sources: [24] [25] [26] [27] [28] [29] [30] [31]

2.2.2 Sustain implications for nurse supply

There are longer-term issues to consider, beyond the first immediate response to the impact of COVID-19. Systems now have to support vaccination programmes, maintain the capacity to meet additional and future pandemic waves, whilst also assessing how to meet increases in demand caused by infected patients who have now developed longer-term chronic conditions -- sometimes termed “long COVID”. [32] There is also a need to redeploy resources to other parts of the health system to enable the backlog of non-COVID-19 care to be dealt with. The combination of these demand side factors has widened the nurse demand- supply gap in most countries.

One key aspect of policy response to the pandemic has been vaccination. Where vaccines have been available, the delivery programme is at a varying pace and is also placing demands on the nursing workforce, both in terms of the need for specific training and for possible redeployment to support vaccination programmes. Prior to COVID-19 impacting on global health, ICN had highlighted that the role of nurses in immunisation programmes varied markedly in different countries, and that programme effectiveness was often linked to having nurses in advanced roles, with prescriptive authority.[33] This message has been restated and emphasised by ICN when mass vaccinations as a policy response to COVID-19 were coming on the agenda.[34]

Nurses have been at the front line of the 2021 vaccination efforts in many countries.[35] [36] For example, in **Israel**, which was one of the early success stories of rapid vaccine rollout in early/mid-2021, nurses led and managed the programme[37]; a similar central role for nurses is reported in **Chile**.[38] In other countries, however, NNAs are having to continue to lobby governments to make full use of nursing skills and nursing numbers in the vaccine roll-out.[39]

The inadequate and inequitable supply of vaccines to many countries has been highlighted by ICN[40], who has also advocated with other groups that nurses and other health professionals must have prioritised access to the vaccine in order to enable them to continue to lead health system responses. In September 2021, ICN highlighted that only one in ten health workers in Africa had been fully vaccinated.[41]

As well as the vaccination linked supply/demand impacts, there are other “sustain” implications for nurse supply. These include deployment of nurses from temporary working in intensive care back to their “normal” clinical areas (in some cases this will include maintaining flexibility to shift them back if there are successive pandemic waves); reducing or ending the deployment of volunteer “returner” nurses (also in some cases integrating them into the workforce, or retaining them on a reserve “pool” that can be rapidly redeployed if there are other waves); transitioning student nurses back to their learning role so that they can finish their disrupted studies; and planning and providing staff cover to allow time off work or in less stressful work areas for front line staff that have burned out, or are in ill health as a result of their intensive workload in the initial phase of COVID-19.

Where countries have the resources, the pandemic has driven an increase in the use of tele-health and other types of digital support to remote care, enable access and increase efficiencies. This is increasing the demand for nurses with digital skills ("digital literacy").[42]

2.3 Demand for nurses means demands on nurses: The impact of the pandemic on the workforce

As highlighted above, it is obvious that the pandemic has forced rapid change in policies to increase nurse supply, at the system level, in all countries. What must not be forgotten during this urgent response phase is that each of these policies has made demands on nurses, and that each working nurse deserves consideration during policy development and implementation. If policy makers give proper attention to the impact of their decisions on individual nurses, then retention and future supply will improve; focus only at the system level, ignore the impact on nurses, and nurse retention will worsen.

In addition, as highlighted above, the pandemic is not a short-term "one-off" challenge for nurses – it is long term, relentless and cyclical in its damaging impact on nurses and health systems. The very length of time that the pandemic has now been impacting is in itself an accelerator of damage.

It is only two years since the pandemic first became apparent, but there is already a substantial and growing evidence base on nurse workforce impact. Using the search words "COVID nurse retention" on Google Scholar gives more than 11,000 hits just for 2020- 2021. This evidence focuses both on the personal level (stress, workload, infection risks, demands made of nurses to "cope" and be "resilient", and concern about "moral injury" when nurses are required to make or witness ethically challenging decisions about patient care delivery)[43] and on the implications of the system responses described in the previous section (re-deployment, maintenance of safe staffing, new responsibilities, access to adequate PPE, vaccinations, etc.).

Whilst much of the published evidence focuses on nurses working in urban hospitals, the impact of COVID-19 has been system wide, and some studies reported below examine nursing homes and primary care work locations. In addition, the impact on student nurses is important to consider – a separate group, but in many countries, students have been called onto "front line" work, and/ or have had their studies disrupted. They too have experienced stress, low staffing, high workload and potential burnout. [44] [45] [46]

A major part of this rapidly growing evidence base is provided by national or local surveys of nurses, often led by, or supported by, NNAs. These surveys both expose the damage to individual nurses and highlight the risks to the sustainability of the nursing workforce. Policy makers must take account and act on these findings.

Table 2 below highlights just some of these studies, reporting from Australia, Belgium, Brazil, Canada, China, Egypt, Germany, India, Iran, Ireland, the Economic Community of West African

States (ECOWAS), Japan, Lebanon, the Netherlands, Oman, the Philippines, Qatar, the Republic of Korea, South Africa, Spain, Taiwan, Uganda, the UK, and the USA amongst many others.

Table 2: Key findings from pandemic related surveys of nurses, 2020-21

Australia[47] [48]	**Online survey of 11,000 respondents, Aug-Oct 2020:** • 44.11% of respondents were moderately or extremely concerned for their personal health and safety • 16.63% of respondents had sought mental health or wellbeing support from external providers • Almost half (46.74%) felt their workload had significantly or moderately increased • Around half were moderately or extremely concerned about having adequate staff (53.18%), the welfare of their colleagues (52.15%) and having the right skills mix in the workplace (51.43%) **Online survey of 637 nurses in primary health care, 2020:** • 22.0% reported having considered resignation, the primary reasons being concern for personal physical and psychological safety; only approximately one fourth of respondents reported always having sufficient gowns and P2/N95 masks
Belgium[49]	**Online survey of 1135 Intensive Care (ICU) Nurses** • Two-thirds of ICU nurses were at risk of burnout and this risk was associated with their working conditions during the first wave of the COVID-19 pandemic
Brazil [50]	**Online survey of 499 nurses and nursing technicians in four hospitals, August-Sept 2020** • Burnout was identified in 60 (12%) workers; there was higher prevalence among nurses (17%)
Canada[51] [52]	**Survey of 1705 frontline nurses, July-November 2020** (of whom 782 reported caring for COVID-19 patients): • High chronic fatigue, poor quality of care, lower work satisfaction and higher intention to leave their organisation were found for nurses caring for COVID-19 patients

	Survey of 3676 nurses, June-July 2020: • 52% reported inadequate nurse staffing • 49% indicated some level of disagreement about access to sufficient PPE in their workplace • Almost half the sample (47%) met the diagnostic cut-off indicative of potential PTSD. Nurses with negative ratings of most workplace safety indicators were more likely to suffer from PTSD, anxiety, and depression
China[53]	**Online survey of 4692 frontline hospital nurses, February 2020:** • The overall mental health of frontline nurses was generally poor during COVID-19 outbreak; 9.4% exhibited depression; 6.5% reported suicidal thoughts
Egypt[54]	**Survey of 207 nurses working in teaching hospitals, March-April 2020:** • More than half reported increasing workload and stress.
Germany[55]	**Two surveys of nurse long-term care managers: 532 respondents in April 2020, 301 respondents in Dec 2020:** • Consideration of intention to quit the profession often or very often since the outbreak of the pandemic increased significantly from 12.8% in survey one to 20.3% in survey two
India[56]	**Survey of 120 front line nurses in the emergency department of a tertiary care centre in North India, August 2020:** • The nurses experienced a moderate-to-severe level of burnout in emotional exhaustion and depersonalization
Iran[57]	**Survey of 479 nurses working in COVID-19 response, Iran, June 2020:** • Study reports a positive relationship between PTSD, general health, job demand and job strain with turnover intention

Ireland[58]	**Online survey of 2642 nurses and midwives in Ireland, August-September 2020:** • 52.17% had a patient they cared for die because of COVID-19 • 82.72% reported COVID-19 had a negative psychological impact on them • 61% considered leaving the profession
Economic Community of West African States (ECOWAS)[59]	**Online survey of 1000 nurse respondents in 15 countries of ECOWAS, April-May 2020:** • Moderate (78%) or severe (10%) stress was reported by most nurses; those with normal or low-level stress was only 12%
Japan[60]	**National survey of 2,765 hospital administrators, September 2020:** • Hospitals that were designated to accept COVID-19 patients exhibited a higher nurse leaving rate: 21.3%, compared to 11.3% in other institutions
Lebanon[61]	**Online survey of 511 nurse members of NNA, July-October 2020:** • Two in five nurses indicated that nothing would make them give up nursing (40.6%); but nearly as many (38.3%) indicated that they did not want to be a nurse anymore, but that their families need their salary; a quarter of respondents indicated that they were thinking of working outside the country (24.8%)
Netherlands[62]	**National survey of 726 ICU nurses, September 2020:** • Symptoms of anxiety, depression, and post-traumatic stress disorder were reported by 27.0%, 18.6% and 22.2% of nurse respondents
Oman[63]	**National survey with 1,130 nurse respondents, August 2020:** • 75.6% reported stress, • 44.2% reported anxiety • 38.5% reported depression • 73.7% reported poor sleep

Philippines[64]	**Survey of 261 frontline nurses in 5 COVID-19 referral hospitals:** • Fear of COVID-19 was shown to decrease job satisfaction and increase organisational and professional turnover intention among frontline nurses
Qatar[65]	**Survey of 512 nurse respondents, August-September 2020:** • Nurses in Qatar had significantly higher turnover intentions during COVID-19 compared to before COVID-19; nurses who worked in a COVID-19 facility for more than three months had significantly higher turnover intention than those who did not work in a COVID-19 facility
Republic of Korea[66] [67]	**Survey of 2,489 nurses, April-May 2020:** • 72.8% of those who participated experienced unfair treatment such as forced shift change, forced individual time off, forced change of work units, and unpaid leave **Survey of 340 nurses at seven public hospitals, October 2020:** • Nurses who cared for COVID-19 patients had higher turnover intentions than general nurses: "a decrease in the job resource stress is vital for reducing nurse turnover intentions"
South Africa[68]	**Survey of nurse managers, rural district hospital, South Africa:** • Managers had to deal with pandemic related nurse staffing shortages on a daily basis, resulting from absenteeism due to COVID-19 infection or COVID-19 infected family members at home. The shortage was also worsened by early retirement, resignation or death of nurses
Spain[69]	**National survey, 11,560 nurse respondents April 2020:** • Lack of personal protective equipment was a crucial issue; 80.2% reported high or very high psychological impact of COVID-19; 29.5% of the nurses reported COVID-19 symptoms.
Taiwan[70]	**Survey with 12,596 nurse respondents, April 2020:** • 52.3% were affiliated with hospitals designated for COVID-19 treatment, and 7.1% had provided care for patients with COVID-19. The proportion of nurses with high levels of

	emotional exhaustion was significantly higher in critical care units and in departments related to COVID-19
Uganda[71]	**Survey of 395 nurse respondents in five hospitals, February 2021:** • 40% reported high levels of burnout. Predictors of nurses' burnout were lack of availability of PPE and increased workload
UK[72]	**Online survey of 9,577 members of the Royal College of Nursing, October 2021:** • 74% reported regularly working beyond their contracted hours at least once a week • 68% reported they feel under too much pressure at work, and 62% reported that they are too busy to provide the level of care they would like to. • 57% of respondents stated they are considering or planning to leave their job (the survey in the previous year had reported that 36% of respondents were thinking about leaving). Commonly cited reasons were feeling undervalued (70%), feeling under too much pressure (61%), feeling exhausted (60%), low staffing levels (59%) and low levels of pay (53%)
USA[73] [74] [75]	**Survey of health care workers, 20,665 respondents (incl. 2,301 nurses) at 124 institutions, 2020:** • Burnout was reported in 63% of nurses, and 56% of nurses also reported work overload. • Approximately 1 in 3 physicians and nurses surveyed intend to reduce work hours. • One in 5 physicians and 2 in 5 nurses intend to leave their practice altogether. Burnout, workload and COVID-19–associated stresses were associated with intent to reduce hours or leave, whereas feeling valued was strongly associated with lower odds of reducing hours or leaving **Survey of 400 frontline nurses, 2021:** • 22% indicated they may leave their current positions • 60% said they were more likely to leave since the pandemic began, with insufficient staffing, workload and emotional toll being the most reported factors

	Survey of 5000 nurses and nurse managers, 2021: • Pandemic impact on intention to leave was rated high overall and was highest in nurses with 25+ years of experience and in managers/directors. 11% of the total sample indicated they intended to leave their position, and 20% were undecided. "The combination of those who intend to leave and those who are uncertain about leaving their positions could cause instability in the workforce if not reversed"

The scale of the damage that has been done to the nursing workforce is profound, and global in scale. Table 2 above gives snapshot insights at points in time, using different methods, different measures and definitions, and in just a few countries. The overall impact has been deep and relentless. Both COVID-19 itself, and a lack of effective pandemic policy responses in many countries are to blame.

The country surveys give telling insights; these are backed up by the emergence of integrative reviews examining the nursing workforce and COVID-19, from multiple sources and countries. [76] [77] [78] [79] [80] Notably, one recent multi-country review[81] drawing from 16 studies, including 18,935 nurses, highlighted that the main risk factors that increased nurses' burnout during the pandemic included longer working time in quarantine areas, working in a high-risk environment, working in hospitals with inadequate and insufficient material and human resources, and increased workload and lower level of specialised training regarding COVID-19. Some of the multi-profession studies reported above also highlighted that nurses have been at greater risk, and are more likely to report burnout and intention to leave, than other health workers.[82]

Another international integrative review examined 43 pre- and post-COVID-19 studies on nurse turnover and concluded that nurses' turnover intention rates had increased significantly after the COVID-19 pandemic.[83] A third global scoping review of research on the psychosocial risk factors (PSR) and hazards affecting health care workers (HCWs) during the pandemic (January- October 2020)[84] identified 220 articles and found risk factors related to four sources: personal protective equipment (PPE), job content, work organisation, and social context. The review found that nurses reported worse health outcomes than other HCWs. Most of the research concerned health workers in secondary care, while data on psychosocial risks in primary and community-based settings was scarce.

It is also important to note that the pre-pandemic shortages of nurses had already contributed to high workload and burnout of nurses. A study of nurses and patients in 254 hospitals in the US states of New York and Illinois between December 2019 and February 2020, (i.e. just before the pandemic) concluded that "[h]ospital nurses were burned out and

working in understaffed conditions in the weeks prior to the first wave of COVID-19 cases, posing risks to the public's health".[85]

A review of burnout in nursing, covering the pre-pandemic period up to May 2019 identified and examined 91 research studies, and concluded that "[t]he patterns identified by these studies consistently show that adverse job characteristics—high workload, low staffing levels, long shifts, and low control—are associated with burnout in nursing. The potential consequences for staff and patients are severe".[86] The same authors noted that nurse burnout "was linked to reduced patient safety and adverse events, including medication errors, infections and falls. When staff experienced burnout, patient dissatisfaction and family complaints increased.[87]

A more recent systematic review of burnout in nursing, covering the period up to the early phase of the pandemic (October 2020)[88] has reinforced the need to look at nurse burnout as a symptom that requires organisational responses: "Nurse burnout is associated with worsening safety and quality of care, decreased patient satisfaction, and nurses' organizational commitment and productivity. Traditionally, burnout is viewed as an individual issue. However, reframing burnout as an organizational and collective phenomenon affords the broader perspective necessary to address nurse burnout".

It is essential to also take account of the pandemic impact on nurses as individuals with a life beyond the workplace, with "non-work" commitments, and how this can exacerbate work related stress and burnout. For example, a survey of 896 US nurses with responsibility for at least one child below 18 years of age examined their perception of COVID-19 health risks, and their parenting stress during the pandemic[89]. The study reported that nurses' concerns about the potential risks if they were to become infected, and their worries about the potential risks to family due to their clinical roles, add significantly to their general stress. It concluded that "[c]hallenges experienced by nurses must be addressed as sustained levels of work-life imbalance may contribute to nursing shortages as nurses succumb to the strain of the stress created by the COVID-19 pandemic".

Another rapid review and meta-analysis reinforces the need to look beyond the workplace when examining the occurrence, prevention and management of the psychological effects of emerging virus outbreaks on health care workers.[90] It concluded that risk factors for psychological distress amongst health workers included being younger, being more junior, being the parents of dependent children, or having an infected family member. Longer quarantine, lack of practical support, and stigma also contributed. The review concluded that clear communication, access to adequate personal protection, adequate rest, and both practical and psychological support were associated with reduced morbidity.

One of the relatively few studies to examine the impact of COVID-19 in rural health surveyed 632 rural community nurses and other rural front line staff in Australia[91] and reported that

over half (56.1%) of respondents showed high emotional exhaustion (burnout) and highlighted that "COVID-19 has increased the workload and stress on rural front-line community staff. The major sources of stress were related to organisations' responses to COVID-19 and not COVID-19 per se. The data suggest the most effective mental health interventions are practical and preventive, such as firstly ensuring fair and reasonable workloads".

In combination, these surveys and reviews, all published within the last two years, paint a stark picture. The pre-pandemic shortage of nurses has been exacerbated by the cumulative and increasing negative impact of successive waves of the pandemic. Nurse burnout is linked to poorer quality of care, lower patient satisfaction, and reduced productivity. Pre-pandemic causes of burnout, related to work environment and workload, have been magnified.

Nurses have died, others are ill. Burnt-out nurses are leaving employment or taking absence. Some who have "held on" for the first year or more of the pandemic are now exhausted and will have to step down to less demanding roles, have respite, step away to work in other sectors, or retirement. Those who remain at work report increasing levels of stress, and an increasing propensity to consider leaving their job or profession. There is a huge concern that high levels of nurse burnout are reported in many of these studies, and that the increased "intention to leave", expressed in so many of the surveys will become "nurses who have left".

2.4 Global and local impact and the urgent need for nurse workforce impact assessments

What is the global and local impact of the pandemic on the nursing workforce? It is not possible to assess this in any detail because of an absence of complete data sets, and because it is a continuing and changing impact, which will reverberate for years.

Even basic accurate and comparable data on COVID-19 related increases in nurse burnout, absence, turnover and early retirement is scant, and there are major data gaps, as highlighted in a recent systematic review on the pandemic and health workforce: "Notable evidence gaps included occupational and psychosocial factors affecting healthcare workers' absenteeism and risk of burnout, gendered considerations of HRH capacity, evaluations in low- and lower-middle income countries, and policy-actionable assessments to inform post-pandemic recovery and sustainability of services for noncommunicable disease management".[92]

However, the surveys and reviews reported in the previous section of this brief give insights and present a worrying picture of burnt-out individuals, and damaged health systems. There is a pandemic "vicious cycle" of higher demand/lower nurse staffing, causing higher absence and lower retention, leading to lower staffing, which in turn is making more nurses leave work, or intend to leave.

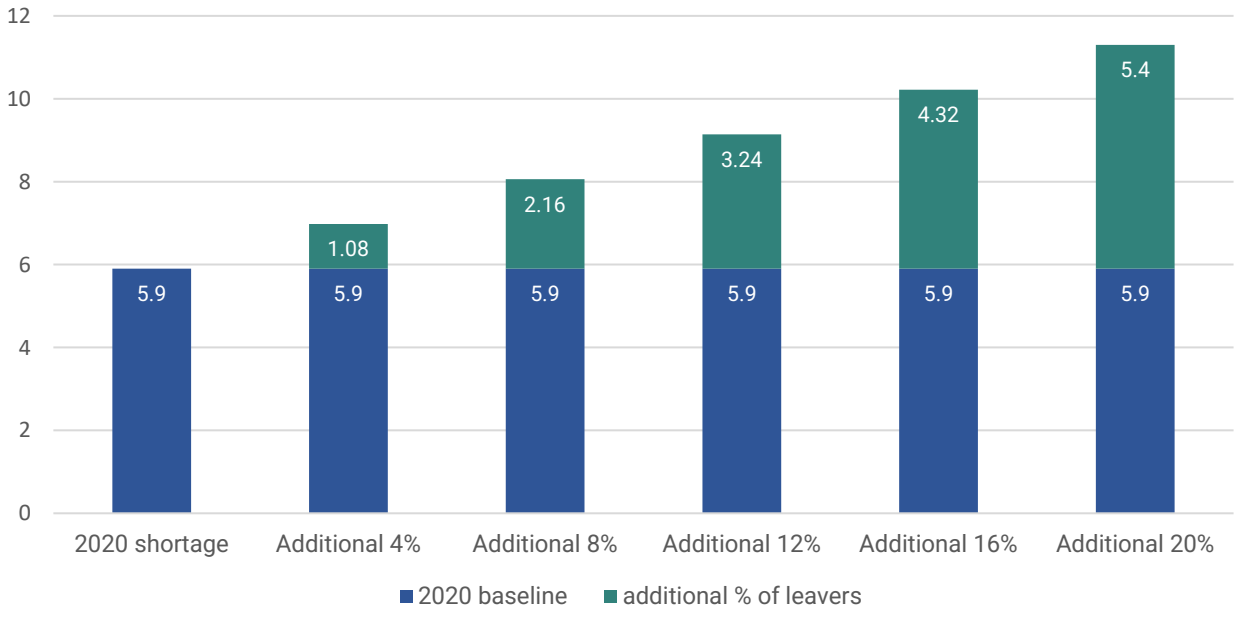
The vulnerability of the global nurse workforce to any increase in outflow, because of pandemic-related ill health, absence, burnout and early retirement can be illustrated using SOWN data (see Box 1).

Box 1: Estimating the pandemic impact on global nursing shortages

SOWN estimated the pre-pandemic workforce as being 27.9 million. **If just an additional 1% of these nurses leaves the profession because of the pandemic, then there has been a loss of 280,000 nurses. If 4% were to leave, then the "lost" outflow will be more than one million. It is likely that the emerging information on nurse absences and short staffing as a result of the Omicron variant may further push up the leaver rate.**

SOWN had estimated the pre-pandemic global shortage of nurses at 5.9 million. **A 4% increase in nurse outflow would push the demand- supply deficit gap up to almost 7 million missing nurses. An 8% increase would mean a shortage gap of more than 8 million nurses. 12% would push the gap to more than 9 million, and 20% increase in leavers from the current workforce would increase the shortage gap to more than 11 million nurses (See Figure 1 below).**

Figure 1: Additional potential nurse leavers,
in millions, under different additional % leaving rates



These headline estimates show the scale of the vulnerability of the global nursing workforce. The reality is that nearly all (89%) of the pre-pandemic nurse shortages were concentrated in low- and lower middle-income countries. These countries will also suffer disproportionately from the impact of pandemic-driven increased nurse outflow. They are often least equipped

to respond to the system challenges of the pandemic and can ill afford to lose any of their scarce nursing resources. However, no country will be immune from the possibility of increased numbers of nurses leaving their system; for example, many high-income OECD countries already have a relatively high proportion of nurses in pre-retirement age groups, who will be particularly vulnerable to increased outflow.

There is a desperate need to move rapidly to a situation where countries and systems can assess more accurately and speedily the current and future losses of nurses, so that action can be taken to protect the nursing workforce, plan for future requirements, and act to tackle the nurse workforce deficit. What is required from each health system and country is that they conduct periodic pandemic **impact assessments of the nursing workforce**. Assessing and evaluating workforce impact was promoted by WHO, in the global human resources for health strategy in 2016,[93] and options and models were then reviewed[94]. There is an urgent requirement to develop and apply a specific standardised impact assessment approach to the nursing workforce as it responds to the pandemic,[95] for two critical reasons.

Firstly, there is a need to provide rapid alerts to damage being done to individual nurse health and well-being. As highlighted above, it is becoming increasingly apparent that many nurses are or will suffer from burnout and other physical and mental illness, including PTSD, as a result of their experiences in working long hours in high intensity environments, often with inadequate support and PPE. This means there is an urgent necessity for the provision of more effective support on staffing levels and work environment, as well as adequate and long-term counselling and support for stressed staff.[96]

An essential part of this response must be to shift the policy, professional and management focus from individual nurses having to “cope” and “be resilient” with unbearable pandemic-driven work burdens, to one where employers and organisations take responsibility for creating and maintaining supportive working conditions and adequate staffing.

One recent review has highlighted that “COVID-19 also demonstrates the limitations of self-care, one of the most touted frameworks to reduce shared stress and burnout… Although self-care can be useful in specific roles, the primary onus for reduction of both burnout and shared trauma should be shifted from the individual worker to the organization”[97]. Another review on nurse burnout has emphasised “the evidence clearly does not support interventions to reduce burnout that are targeted at individual behaviours – such as mindfulness or resilience training – but, rather, at those that aim to fix mismatches in the work environment.”[98]

Another recent report, from the European Commission expert panel on the mental health of the health workforce during the pandemic, has made similar recommendations. It has emphasised the need to “immediately support the mental health and alleviate the

consequences of stress, fear, and moral injury", and stressed that "[t]he organisation, as opposed to the individual worker, is to be held publicly accountable for worker wellbeing".[99]

Secondly, there is need to have more accurate, complete and comparable data on the overall impact of the pandemic on nurse infection, "long-COVID" and mortality rates, on nurse staffing and absence rates (and reasons for absence), and on nurse turnover and retirement patterns. This data must also be made available rapidly, as near as possible to "real time" in order to support informed rapid policy response[100], and to provide more accurate estimates for use in nurse workforce planning. The emerging evidence on the impact of the new Omicron variant on nurse staffing and absence re-enforces the need for periodic and rapid impact assessment to track changes and to prevent ill-informed panic responses.

This data is an essential building block for any informed policy response to sustaining nurse supply at a time of global pandemic. It can help identify the underlying reasons for changes in nurse supply, can pinpoint where current nurse shortages are most pronounced, and can be used to develop scenarios and plans to assess and respond more effectively to emerging nurse supply problems. Annex 1 provides some "core" workforce planning data elements for the assessment of impact on nurses.

The need for nurse workforce data improvements and regular nurse workforce impact assessments will be followed up in the next two chapters. Chapter 3 focuses on the need for greater policy emphasis on nurse self-sufficiency, whilst in Chapter 4 more detailed attention is given to the critical need to improve nurse retention.

3. Self-sufficiency and nurse supply

Key points summary

- The **pandemic has increased the immediate need for nurses in all countries**, and will further ramp up demand over the next few years.
- **Many countries must focus on increased supply of "new nurses"**, both to meet growing and changing demand created by the pandemic, and because of reduced current supply.
- There is **huge variation in the relative size of new supply of nurses from domestic training**, across the high- income countries of the OECD.
- Many low- and middle-income countries entered the pandemic with inadequate supply of nurses.
- There is **emerging evidence of increased active and "fast track" international recruitment by some high-income OECD countries,** which could undermine the ability of some "source" countries to respond effectively to pandemic challenges.
- **The pandemic has heightened the risks associated with international recruitment:** cutting across international supply to some high-income "destination" countries, in the short term, whilst driving up "push" factors and likely outflow from low-income "source" countries.
- There is a **growing policy emphasis on the potential of government- to- government bilateral agreements** to "manage" international recruitment of nurses — **these agreements must be independently monitored to assure full compliance by all parties.**
- There is **an urgent need to monitor trends in international recruitment flows using a self-sufficiency index** which can flag how reliant countries are on international inflows, and how the patterns of flows and impact are changing.

3.1 Nurse demand-supply gaps are growing

COVID-19 has placed huge demands on nurses in all countries. As highlighted in the previous chapter, policy responses must take account of and respond to the personal impacts experienced by nurses working during the pandemic, but there must also be an urgent policy focus on responding to the growing nurse workforce gap created by the impact of COVID-19. This gap is likely to grow further without funded and targeted policy action.

At the simplest level of analysis, the pandemic has increased the immediate need for nurses, and will further ramp up demand over the next few years. Most countries entered the pandemic with nursing shortages, and weak supply has been further undermined by COVID-19 related mortality, stress, burnout and staff absence. A joint OECD and EU report on policy responses to the pandemic in 36 countries in Europe has highlighted that "[p]re-existing shortages of nurses were exacerbated during the peak of the epidemic, also because many nurses themselves became infected by the virus... The demand for nurses is expected to continue to rise in the years ahead because of population ageing while many nurses are approaching retirement age".[101]

A more recent OECD report covering its 38 countries stresses that "[t]he pandemic highlights the persistent shortage of health workers stressing the importance of investing more in the years ahead on improving primary care and disease prevention and strengthen the resilience and preparedness of health systems".[102] In a presentation to the ICN Congress in November 2021, the Head of Health Division at OECD suggested that countries will need to invest an extra ~1% of GDP in their health workforce, as part of a broader investment package to boost health system resilience; basing this estimate on benchmarking analysis to estimate additional health workers, higher salaries, and medical reserve needed (figures were OECD averages).[103]

OECD has also reported that "[t]he COVID-19 pandemic has brought further attention to the pay rate of nurses and the need to ensure sufficient remuneration to attract and retain nurses in the profession".[104] Sustained improvement in recruitment and retention of nurses will not be achievable without policy attention to ensure that they receive fair pay and decent working conditions.

Without such targeted investment, there will be an overall increase in the nurse supply deficit, with the risk of an ever- growing global shortage of nurses, exacerbated by increased international mobility which could further deplete supply in low- and middle-income so-called "source" countries.

Many countries are now realising that they must invest in supporting increased supply of "new nurses", both to meet growing and changing demand created by the pandemic, and because of reduced supply (retention) of the current nursing workforce. Emerging priorities include the need for nurses with intensive care, public health, and primary care skills; and developing or increasing the supply of clinical specialist nurses and those working in advanced practice roles and as nurse practitioners, to provide more effective staff mix.

The main source of new supply should be to invest in training more nurses domestically; a secondary source, open to countries that have the available resources, is to resort to active international recruitment. This chapter assesses the impact of the pandemic on current and future domestic and international supply of nurses. It reports on trends and drivers, and

concludes with a clear message to policy makers about the need to focus on self-sufficiency. Those that place a policy emphasis on international recruitment as the main "quick fix" solution risk exacerbating current shortages in some low-income countries if their recruitment activities do not comply with "ethical" requirements.

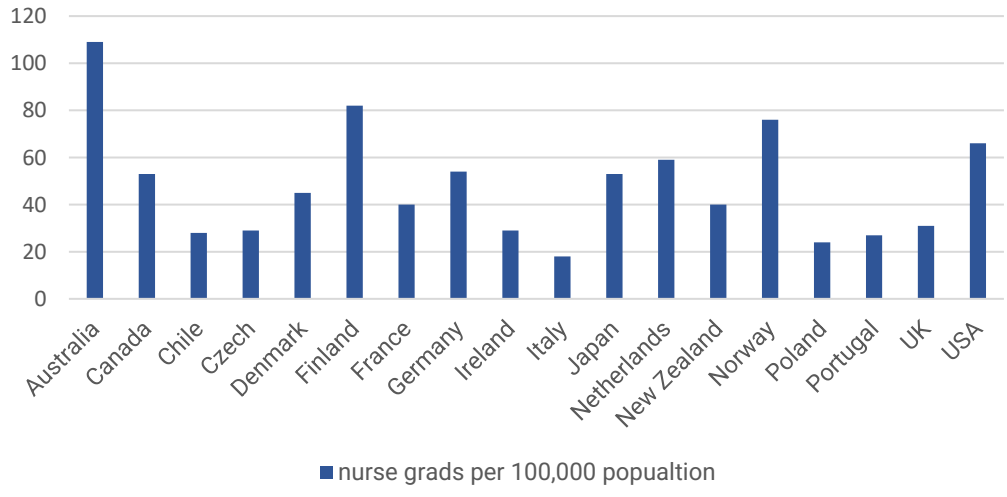
3.2 Domestic supply of nurses varies, but is often inadequate

Any country that has the resources should aim for a graduation rate (sometimes termed net increment rate) of new nurses entering the workforce from domestic training that can meet longer-term sustainability. In practice, some countries have not invested sufficiently in training adequate numbers of nurses to meet their own demands. This was highlighted in the SOWN report in 2020, which recommended increased investment in expanding the nursing workforce as one of the main policy interventions at country level.

SOWN reported that on average, high-income countries had more than three times the graduation rate, 38.7 nurses per 100,000 population, of low-income countries (10.4).[105] However, there is huge variation in the graduation rate across these high-income countries, reflecting very different decisions being made about levels of investment in the domestic nursing workforce, and which in turn can be a major factor in driving increases in active international recruitment of nurses.

This variation is highlighted in Figure 2, which shows the number of nurses graduating per 100,000 population in selected countries of the OECD.

Figure 2: Selected OECD countries, nurse graduations per 100,000 population, 2020 or most recent year



Source: OECD 2021[106]

Note: The OECD reports that the Netherlands data is provisional, and the UK data is an estimate.

In the selected mid-large size OECD countries shown in Figure 2, the nurse graduation rate was more than five times higher in **Australia** (at more than 100 per 100,000) than in **Italy** (18); other countries reported to have relatively low graduation rates included Poland (24), **Portugal** (27), **Chile** (28), **Ireland** (29), and the **UK** (31). Other countries with reported high graduation rates were **Norway** (76) and **Finland** (82). The figure highlights a huge variation in the pre-pandemic size of new supply of nurses from domestic training, across the high-income countries of the OECD. These countries, with very different levels of domestic supply of "new" nurses from training, were then hit by a common challenge – a pandemic which suddenly increased demand for nurses.

3.3 The pandemic impact on nurse workforce supply in low- and middle- income countries

The COVID-19 pandemic impact on the nurse workforce in low- and middle-income countries is difficult to assess systematically or in detail because of existing data limitations, compounded by the exigencies of the pandemic. However, there are studies that can be used to provide baseline and trend indications.

SOWN had highlighted that countries experiencing low densities of nurses are mostly located in the WHO African, South-East Asia and Eastern Mediterranean regions, and in parts of Latin America. It reported that in 2018, "[g]lobal inequalities in availability of nursing personnel are largely income driven, with a density of 9.1 nurses per 10,000 population in low-income countries compared to 107.7 per 10,000 population in high-income economies":[107] a tenfold variation in nurse availability.

SOWN also stressed that income level of countries is also strongly associated with shortages in the nursing workforce. Eighty-nine percent of the nurse supply gaps identified in 2018 were concentrated in low- and lower middle-income countries. SOWN estimated that addressing the shortage of nursing personnel in low-density countries would require an average increase of 8.8% in the number of yearly graduates from 2018 to 2030 (range: 0.2–13.4%) and improving absorption capacity. The countries accounting for the largest shortages (in numerical terms) in 2018 included **Bangladesh, India, Indonesia, Nigeria, and Pakistan.** Population growth in many low-income countries will push up demand for nurses, irrespective of the current workforce profile. For example, in **Nigeria**, population growth-based projections from 2016-2030 suggest that there would be an "availability gap" (shortage) of up to 140,000 nurses and midwives in 2030, compared to 2016, a 29% shortfall.[108]

Another recent study, by the World Bank, examined nurse labour markets in the 14 countries of the ECSA (Eastern, Central and Southern African Region) (**Botswana, Eswatini, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, South Africa,**

South Sudan, Tanzania, Uganda, Zambia, Zimbabwe).[109] It reported that demand for nurses was growing, but high vacancy rates in the public sector remained a problem. It highlighted documented vacancy rates ranged from 30-55% among ECSA countries, and noted that qualitative data reinforced the challenge countries are facing to fulfill vacancies for new nurses: "… in addition to the lack of job opportunities, nurses do not fill posts due to "poor wage, remote location, lack of amenities, and poor working conditions". The ECSA study highlighted that, by 2030, 4.7 billion dollars would be required to train additional nurses to achieve the number needed in the 14 countries.[110]

Both SOWN and the ECSA study analysis reflect the pre-pandemic situation. The ECSA study was not published until after the beginning of the pandemic and gave consideration to the likely pandemic impact in an annex, reflecting that "[e]ffective demand for nurses will likely increase, particularly those with critical and pulmonary care competencies. Nurses in a 79% female workforce largely under 45 years of age may struggle to meet stressful and dangerous job demands while caring for families and children no longer in school. This may lead to higher rates of attrition in the nursing workforce".[111] It also noted that "[l]ong working hours, dangerous working conditions, lack of access to personal protective equipment and psychological first aid will likely drive increases in attrition and absenteeism".[112]

A recent assessment of the impact of the pandemic on the health workforce in five Latin American countries, published by WHO, covering **Bolivia (Plurinational State of), Chile, Colombia, Ecuador and Peru** reinforced the point that these countries entered the pandemic with staff shortages, and also made the critical point about sustainability: "The biggest challenge ahead is to develop mechanisms to absorb the newly recruited HRH to reduce pre-pandemic gaps and maintain improvements in their terms and conditions of employment, such as pay increases, which in turn largely depend on identifying adequate sources of funding."[113]

The impact of the pandemic can only have acted to increase the nurse demand-supply gap, in the short term at least, because of increased demand and diminished supply in many countries, which already had significant pre-pandemic shortages.

Low levels of nurse staffing matter, because it impacts negatively on care quality and outcomes. A recent systematic review has collated the evidence on nurse staffing and outcomes from low- and middle-income countries.[114] Based on an assessment of 27 studies in low- and middle-income countries, the review concluded that "[l]ower nurse-to-patient ratios and higher nurse workload are linked to in-hospital mortality, hospital-acquired infections, and medication errors among patients, and high levels of burnout, needlestick and sharps injuries, absenteeism, and intention to leave their job among nurses in low- and middle-income countries. The results of this review show similarities with the evidence from high-income countries regarding poor outcomes for patients and nurses. These findings

should be considered in light of the lower nurse-to-patient ratios in most low- and middle-income countries".

3.4 The pandemic is driving up demand for nurses: notably in "destination" countries

As discussed in Chapter 2, in many countries the early phase of the pandemic led to increased short-term supply of domestic nurses, as "surge" policies were enacted by systems and governments to rapidly scale up the nursing workforce. This often included requiring existing nurses to work longer hours, encouraging returners to come back into employment, co-opting student nurses into work, and fast-tracking international recruits.

These emergency measures cannot be sustained in the long term, and may actually mask a reduced supply of longer-term/ permanent staff if COVID-19 impacts on nurse workload and burnout to reduce the retention rates or working hours of the current nurse workforce.

To understand the dynamics of domestic and international supply of nurses, it is necessary to assess domestic supply factors, taking into account the impact of the pandemic. Nursing shortages are created when demand outstrips supply, and as noted earlier, many countries have seen the demand-supply gap widen due to the pandemic. These countries must try to replace nurses who have left (or will leave because of burnout and ageing of the workforce), retain those who have stayed, and must also try recruit additional nurses to meet increased and changing demand.

As with other aspects of the pandemic effect, there is as yet only limited country level analysis available which take account of the impact of the pandemic on projected increased demand and nursing numbers. However, this emerging evidence base paints a worrying picture.

For example, in **Canada** it has been highlighted[115] that the number of vacancies for registered nurses (RN)/ Registered Psychiatric Nurses (RPN) almost doubled from 12,860 in the first quarter of 2020, to 22,425 in the second quarter of 2021. At Province level, there are more recent citings of growing shortages. **Nova Scotia** officially reports more than 1000 nursing vacancies and has established a new Office of Health Care Professionals Recruitment to improve recruitment.[116] The Province of **Manitoba** is reported to have a nursing vacancy rate of 18.8%, with 2,267 vacant nursing positions, in September 2021.[117]

The National Health Service (NHS) in **England** reported a registered nurse vacancy rate of 10.5% on 30 September 2021 (39,813 registered nurse vacancies); [118] recent projections suggesting that there will be a need for 69,000 more nurses by 2024/5 to meet growing pandemic related demand.[119]

In **Germany,** it has been reported that "[t]he pandemic is accelerating a broad trend that has been building for some time," with the Federal Labour Agency in Germany (Bundesagentur für Arbeit) reporting that the average number of vacant positions for registered

nurses in long-term care in 2019 was 15,000 and in acute care was 12,400; furthermore, they highlighted that it took 205 days to fill a position for a nurse in long-term care and 174 days for a nurse in a hospital.[120] A more recent report from Germany notes that "[a]t present, vacancies outnumber the amount of qualified job seekers on the job market. According to expert estimations, the nursing sector will need 150,000 new nurses by 2025. Demographic changes in the country will exacerbate this situation in the medium and long term".[121]

Switzerland held a national referendum on 28 November 2021 on nursing shortages. With leadership by the Swiss Professional Association of Nurses, it achieved a voting majority with aims to improve training, quality assurance through more staff, fair employment conditions and improved recognition of the profession. It was reported that "there will be a shortfall of 65,000 nurses across all training levels by 2030 if no action is taken. This is partly due to the fact that only about half of the number of nurses in Switzerland that will be required in the future are currently undergoing training", with a very high reliance on international recruitment[122]. A third of all nurses working in Swiss hospitals are foreign trained; during the pandemic, this high dependency on foreign staff posed problems: "When countries closed their borders to limit the spread of the virus, Switzerland was forced to negotiate with its neighbours to allow health workers to continue to cross the border to work".[123]

In the **USA,** the Bureau of Labor Statistics' Employment Projections 2020-2030 reports that the registered nurse workforce is expected to grow from 3 million in 2019 to 3.4 million in 2030, and that there will be 194,500 vacancies for RNs created each year when nurse retirements and other leavers are considered.[124] A recent report suggested that just over 15% of US nurses left their job during the first year of the pandemic, up roughly five percentage points on the previous year, and that one in five nurses reported they might leave their role providing direct patient care in the next year[125]. Another survey of 6,000 critical care nurses in the US[126] reported that 66% said their experiences during the pandemic have caused them to consider leaving nursing and 92% agreed with the statements: "I believe the pandemic has depleted nurses at my hospital. Their careers will be shorter than they intended."

A recent detailed assessment in the US state of **California** reports a current shortage of 40,567 full-time equivalent RNs, (13.6 % gap) which is projected to persist until 2026. The study found that many older registered nurses in California have left the field and a large number plan on retiring or quitting within the next two years. 26% of registered nurses between the ages of 55 and 64 said they plan to leave the field in the next two years, up from 12% in 2018. The report authors note this was "most likely from burnout and the need to reduce COVID-19 exposure to at-risk family members".[127]

These country examples highlight a growing nurse demand-supply gap. Demand for nurses is increasing because of the pandemic and underlying demographics change; nurse supply is falling behind, because of pandemic driven outflows, and because of underlying demographic change as the workforce ages and more nurses reach retirement.

3.5 Some high-income countries are focusing on the "quick fix" of active international recruitment

The pandemic has increased demand for nurses, exposing and accelerating the level of nursing shortages world-wide. It may push some countries to increase the level of domestic-training, but as highlighted in section 3.2, there is huge country-level variation in the current domestic output of nurse graduates, including in high-income countries. Even if there is increased investment to scale up domestic output, there will be a time lag of three or four years at least before any additional new domestic graduates begin to come into the workforce. The replacement need is more urgent—and one obvious feature in some high-income countries is renewed and expanded efforts on international recruitment of nurses as the "quick fix" option.

Even before the pandemic, the scale of the international flow of nurses was large, and growing. OECD analysis highlighted that in 2019, more than 550,000 foreign-trained nurses were working across 36 OECD member countries, which was a marked increase on the 460,000 recorded in 2011.[128] OECD reports the number and/or share of foreign-trained nurses has increased particularly rapidly in **Belgium, France, Germany** and **Switzerland,** with a steady growth also occurring in **Australia, New Zealand, Canada** and the **United States.**[129]

The **United States** reports the highest number of registered international nurses, estimated at almost 197,000; second was the **United Kingdom** with over 100,000 foreign-trained nurses, then **Germany** with 71,000, and **Australia** with 53,000.[130] The OECD has concluded that "[t]he COVID-19 pandemic revealed once more that foreign-trained nurses are key assets for health systems in many OECD countries. Along with bringing into the spotlight the important role and dedication of frontline health workers, the pandemic has further highlighted the deeply embedded challenge of staff shortages as well as the significant contribution that migrant nurses make to the health workforce".[131]

The SOWN report also highlighted that the international mobility of the nursing workforce was increasing, noting that "[m]any high-income countries in different regions appear to have an excessive reliance on international nursing mobility due to low numbers of graduate nurses or existing shortages". One of the main recommendations of the SOWN report was that "[c]ountries that are over-reliant on migrant nurses should aim towards greater self-sufficiency by investing more in domestic production of nurses".[132]

Analysis in this brief suggests that the international flows are increasing again, after some short-term disruption to travel during the initial phases of the pandemic. In response to the urgent need to close the worsening nurse demand-supply gap, many high-income countries are now accelerating their international recruitment efforts. This includes giving nurses preferred immigration status and fast-tracking immigration procedures. A report for the OECD has noted that since the pandemic "many of the OECD countries already reliant on

migrant health workers have implemented additional policy measures to ease migrant entry and the recognition of their foreign professional qualifications".[133]

Some high-income countries, such as **Australia, England** and **Germany** have a long-term reliance on international nurses, and are now looking to increase their international recruitment activity.

In **Australia,** the Federal Health Minister was recently quoted as saying that international nurses who had already applied to come to Australia "would be able to sidestep travel restrictions to secure flights and take up critical jobs" during the pandemic response, and that international inflow of nurses had been "severely disrupted" by international border closures. The cost of flights and quarantine will also be met, and the "airlift" is reportedly likely to be made up largely of nurse migrants from Britain, Ireland, and other countries where nursing qualifications are recognised by regulators as being equivalent to those in Australia.[134]

The state Department of Health in **Western Australia** is offering to cover the cost of flights, relocation fees and the mandatory 14-day COVID-19 hotel quarantine period as it aims to recruit 2,800 nurses by 2023 through local and international recruitment. The international offer was made both to Australian nurses working abroad, as well as to international nurses.[135] On 31 December 2021, it was reported that the surge in Omicron cases in Sydney in the state of **New South Wales**, had led to an "unprecedented" increase in patient numbers and in nurse vacancies (because of infection and self-isolation); attempts to obtain sufficient replacement nursing staff from agencies had failed and the state had "commenced the process for overseas recruitment".[136]

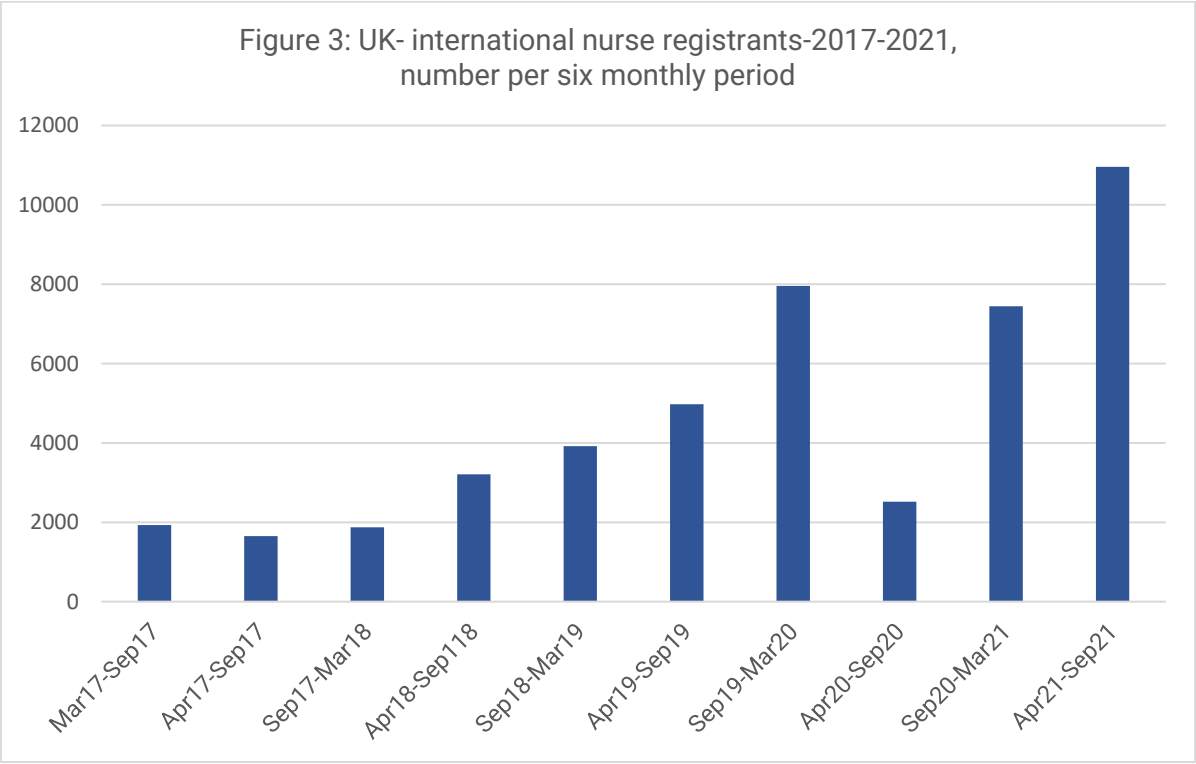
In **Canada**, in the **Province of Ontario** it is reported that between January and August 2021, 2,259 internationally educated nurses (IEN) were registered, more than the total number of IENs registered in all of 2020;[137] the **Province of Quebec** is reported to be developing "recruitment missions" to France, Belgium, Lebanon, Brazil and northern Africa (Algeria, Libya, Mauritania, Morocco and Tunisia), with the aim of helping to fill 4,000 nurse vacancies.[138]

In **England,** national policy stresses the importance of increasing international recruitment, noting that work is also underway to remove barriers to international recruitment and increase capacity for induction and support to overseas nurse recruits, including funding support to National Health Service (NHS) employers who are recruiting from other countries.[139] In particular, it has been stressed that "international recruitment will be a vital component of support for ongoing management of COVID-19 in areas across England, for other service pressures, and for recovery for the NHS from the pandemic", and that "[s]ome new potential supply nations are also emerging".[140]

In December 2021, it was reported that NHS employers had been "urged to seize the big opportunity to maximise support from overseas nurses once again" by further accelerating international recruitment,[141] and there has been a marked increase in international nurses being registered in the UK in the last 18 months. The most recent data, for the six-month period of April to September 2021, showed that almost 11,000 international nurses were registered — more than for the whole previous 12-month period.[142] At the end of the year, in setting out policy responses to the increased nurse absence being created by the Omicron variant, the UK government reported that it was "working to speed up the registration of overseas nurses to practice in the UK — as a result, 800 nurses have been able to register with the Nurse and Midwifery Council this week alone".[143]

Figure 3 below uses registration data to highlight the marked increase in inflow of international nurses to the UK in recent years. The trend since 2017 has been an upward level of international inflow, increasing fivefold across the period, reflecting domestic nursing shortages. Most recently, it shows the temporary travel disruption caused by COVID-19 in the first period of 2020, which has now largely dissipated as a result of "fast tracking" policy efforts to enable large numbers of international nurses to be recruited quickly to the UK. In the six-month period of April-September 2021, more than 10,000 new international nurses were registered in the UK, including more than 4,500 from India, 3,000 from the Philippines and 1,300 from Nigeria.

Figure 3: UK- international nurse registrants-2017-2021, number per six monthly period



Source: Nursing and Midwifery Council, UK 2021[144]

Germany is developing a "Triple Win" approach to international recruitment of nurses[145] which reportedly includes **Bosnia and Herzegovina**, the **Philippines** and **Tunisia**. The reported policy aim is to generate threefold benefits ('triple win') through a bilateral approach: "Pressure is eased on labour markets in the countries of origin, where there are unemployed nurses; migrant nurse remittances provide a developmental stimulus in their countries of origin; the shortage of nurses in Germany is alleviated".

Whilst some countries with long-term high reliance on international recruitment are now ramping up their efforts, demand from high-income destination countries is now also extending beyond the "usual" recruiting countries, to others which have not traditionally been so active in international recruitment. These include **Finland**, which reports a nursing shortage of 30,000 by the end of the decade and is now examining the use of international recruitment,[146] and **Scotland**, where in October 2021, the government announced an allocation of £4.5 million to support active international recruitment of nurses as part of the overall plan for pandemic recovery and renewal.[147]

The obvious risk is that active international recruitment could drive up outflows of nurses from lower-income source countries, and could undermine the ability of these countries to respond effectively to the challenges of COVID-19. This issue is examined in the next section.

3.6 The pandemic will drive increased international outflow of nurses from low/middle income "source" countries

Analysis of pre-pandemic international supply from so-called "source" countries has highlighted that there has been a long-term and growing trend of nurse emigration rates from some low- and middle-income countries, which challenges their ability to meet UN SDG targets and achieve UHC. As noted earlier, OECD analysis highlighted that in 2019, more than 550,000 foreign trained nurses were working across 36 high-income OECD member countries which was a marked increase on the 460,000 recorded in 2011.[148] The OECD has also reported [149] that smaller countries in the Caribbean and the Pacific, and post-conflict countries in Africa have amongst the highest emigration rates with more than half their nurses working in high-income OECD countries.

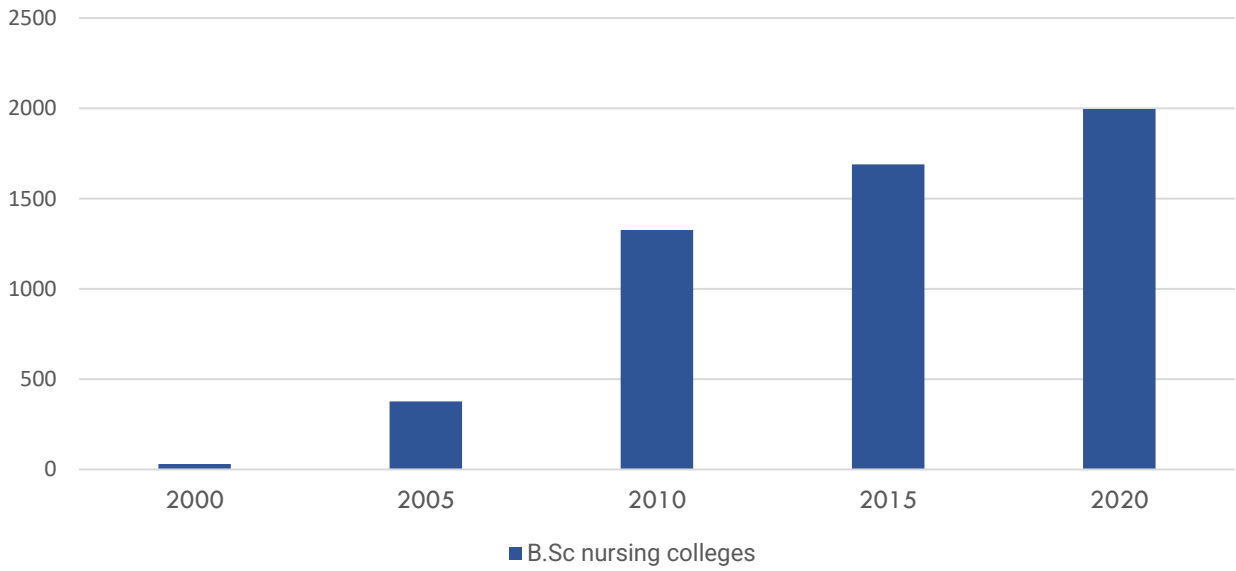
The ECSA study by the World Bank, ICN and Jhpiego in 14 countries (**Botswana, Eswatini, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, South Africa, South Sudan, Tanzania, Uganda, Zambia, Zimbabwe**) noted that outmigration of nurses reduced the available supply of nurses in these "sending" countries, meaning that these countries can "face needs-based shortages of nurses to achieve Sustainable Development Goals" and "poses direct and indirect costs to sending governments, including tuition as well as foregone wages and tax revenue".[150]

The ECSA report also showed that, across the 14 countries, the share of foreign-trained nurses varied widely by country, and "is inversely correlated with the domestic production, as measured by the net increment rate (the number of new graduates in the country, compared to the total nursing supply).[151]

A recent policy brief by the **WHO Africa Region,** which focuses on recruitment and retention of health workers during the pandemic,[152] has noted that the limited number of publications directly focusing on Africa mostly commented on international recruitment of health personnel: "As the pandemic overwhelmed the health systems of many high income nations, triggering a growing demand for health labor in the global North, this raised concerns of potential acceleration of health personnel outward migration from the African continent and LMICs". The brief reported that "[t]he issue driving brain drain from Africa is health worker demotivation (poor remuneration, lack of benefits such as health insurance, risk allowance etc.), poorly conducive environment to execute their skills as in majority of countries in Africa, the budget allocation for the public health sector is insufficient…" and highlighted the need for research on health worker unemployment and underemployment in Africa "to shed light on the paradox of health worker unemployment in countries with critical shortage".

Whilst there are often "push" factors of low incomes, high workload and poor career prospects which are making individual nurses consider migrating, most low- and middle-income countries do not actively encourage their nurses to be internationally mobile. However, there are a few countries, notably **India** and the **Philippines,** where what has been termed a "train for export" model exists. In **India**, rapid growth in the education sector has led to a marked increase in output of nurses from domestic training. This growth has been particularly notable for nursing colleges that train to a Bachelor of Science (BSc) level, which is the qualification most useful for international work. There were only 30 colleges offering the internationally desired BSc in nursing in 2000; this had grown to 1,326 by 2010, and 1,996 by 2020 (See Figure 4). Nearly all of these colleges (1833: 92%) are in the private sector.

Figure 4:
India: Growth of B.Sc nursing colleges



Source: Indian Nursing Council annual report

In the **Philippines,** international nurse recruitment is facilitated by a government agency, the Philippine Overseas Employment Administration (POEA).[153] Most schools of nursing in the Philippines are in the private sector, and the nursing students pay for their own education — often with the express intention of moving abroad to practice when they graduate. This model led to rapid expansion in the number of private-sector nursing schools, meeting international demand for Philippine trained nurses, initially in the United States but, in more recent decades, also to a range of other countries in the Middle East and Gulf (e.g. Saudi Arabia), Europe (e.g. the UK and Ireland), and Australasia (Singapore, New Zealand, Australia). The United States alone is reported to be the home for almost 150,000 Filipino nurses.[154]

Whilst the overall trend is upwards, the actual flow patterns of nurses from low- and middle-income countries to different OECD destination countries varies markedly. Recent analysis by OECD highlighted that in countries with the larger shares of foreign-trained nurses, English-speaking countries host relatively more nurses born in lower-middle-income countries. In New Zealand, Australia and Canada, for example, between 40% to more than 50% of all foreign-trained nurses come from lower-middle-income countries, while in Switzerland and Norway the majority come from other OECD countries.[155]

3.7 Global impact and the urgent need to monitor nurse workforce self sufficiency

The impact of COVID-19 on global nursing workforce trends is likely to exacerbate current nurse supply shortfalls in most countries, but will also be a major risk in increasing global demand-supply inequities. The likely continued growth in international flows of nurses could

deplete some countries of scarce nursing skills. The country reports in section 3.5 of this brief highlight that some active recruiting countries are now fast tracking active international recruitment as an urgent response to domestic shortfalls which have been exacerbated by the pandemic impact.

Whilst all nurses should have the possibilities of free movement, there is an urgent need to monitor and track the aggregate numbers of international flows of nurses in order to highlight source countries that may be at risk, and identify which destination countries are actively increasing their international recruitment activity.

ICN emphasises that countries must focus on nurse workforce sustainability as an integral element in overall nurse workforce planning,[156] [157] and has advocated for the use of a country "self-sufficiency" indicator. When tracked over time, this indicator can flag how reliant countries are on international inflows of nurses in comparison to domestic training. ICN made a statement to the World Health Assembly in November 2020 advocating for the use of a self-sufficiency indicator.[158]

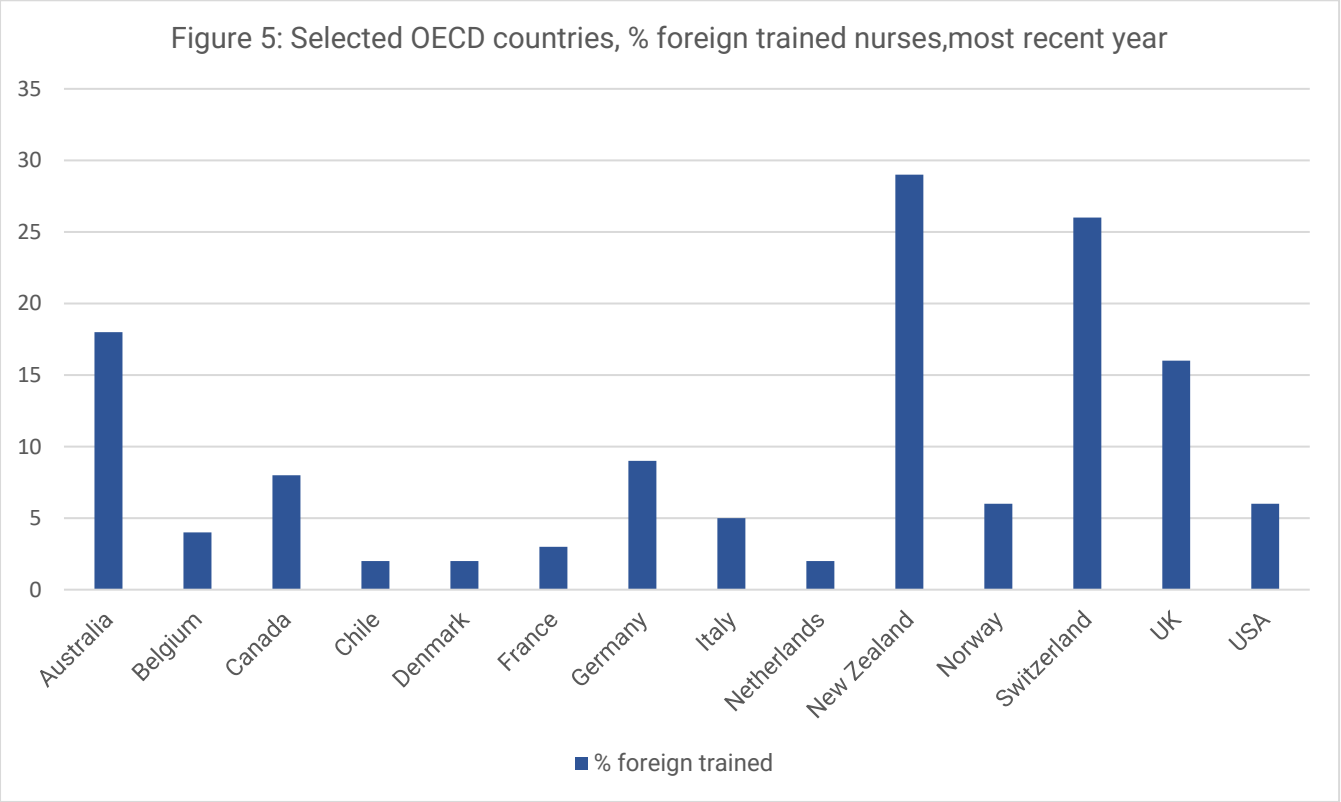
Box 2: Measuring self-sufficiency

Self-sufficiency indicator: the percentage of the total nursing workforce in a country that was foreign trained

Emigration rate: the percentage of nurses born or trained in a country, but working abroad, compared to the total who remain working in the country

The self-sufficiency indicator is determined by assessing the percentage of the total nursing workforce in a country that was foreign trained; the higher the percentage, the less the country is self-sufficient. (An alternative measure, for application particularly in vulnerable source countries, is to estimate an emigration rate.[159] This can be calculated, by estimating the percentage of nurses born or trained in a country, but working abroad, compared to the total who remain working in the country. The higher the emigration rate, the more the nursing workforce of the country has been depleted by international outflows).

This self-sufficiency indicator varies markedly across OECD countries (see Figure 5 below). Some countries, such as **Chile, Denmark** and the **Netherlands** report high self-sufficiency, and have relatively low reliance on international nurses, but in other countries this level of reliance on internationally trained nurses is as high as 26% (New Zealand).



Source: OECD 2021[160]

Note: Switzerland uses different methodology; USA is estimate

Two of the main groups of "low" self-sufficiency countries are some OECD countries, such as New Zealand, as illustrated above, and some of the countries of the Gulf area (e.g. SOWN reports that 77% of nurses in Saudi Arabia are foreign, and 97% in Qatar[161]).

Long-term relatively high reliance on international inflow of nurses is a feature of countries that can attract international nurses because they have "pull" factors such as relatively higher wages, and/or better career and educational opportunities. This entitled status as a "destination" country has in some cases led to them limiting their own investment in education of nurses, because they off-load the costs of training to the "source" country, or to the nurses in these source countries if it is they who have paid the training costs.

A few countries have already made a concerted policy-led effort to shift towards self-sufficiency. One example is Oman, which has explicitly followed a goal of "Omanization" of its nursing workforce, by progressively replacing expatriate nurses with similarly qualified local nurses "to develop a sustainable workforce and achieve self-reliance".[162] COVID-19, which has exposed the risks of high levels of reliance on vulnerable international supply links, is also driving other countries to increase their self-sufficiency. For example, the United Arab Emirates (UAE) announced in July 2021 that it intends to "to develop national cadres in the nursing sector, targeting 10,000 Emiratis within 5 years".[163]

Aiming for nurse workforce self-sufficiency at national level also connects with the WHO Global Strategy on Human Resources. The Strategy was endorsed by all WHO Member States in 2016, and Milestone 2.1 of the strategy is that "[by] 2030, all countries will have made progress towards halving their dependency on foreign-trained health professionals, implementing the WHO Global Code of Practice on the International Recruitment of Health Personnel".[164] To meet this commitment, countries must be able to monitor their level of self-sufficiency, or report on concerning emigration rates.

The WHO Global Code of Practice on the International Recruitment of Health Personnel[165] was endorsed by all WHO Member States in 2010. It sets out a framework for a managed and ethical approach to international recruitment, which is located in a broader context of effective domestic health workforce planning and policy, aimed at workforce sustainability, emphasising the role of bilateral agreements to "manage" international recruitment activity, and which includes a commitment to improved data and monitoring of mobility patterns.

The Code was reviewed by an independent Expert Advisory Group in 2020, who made recommendations to be discussed at the World Health Assembly,[166] where the continued and deepened role of the Code was endorsed. This included the introduction of a Health Workforce Support and Safeguard List of countries[167] that should not be actively targeted for recruitment unless there is a government-to-government agreement in place to allow managed recruitment undertaken "strictly in compliance with the terms of that agreement".

The use of the Code and associated List should frame any active international recruitment. However, it can only be effective if recruiting countries comply with its requirements, and recruitment practices are reported and monitored. In particular, the implementation of bilateral agreements, which is being promoted by WHO, should be independently monitored so as to assure compliance and provide lessons for improvement in this approach.

There is also a related need to monitor recruitment agency activity to assess compliance with the WHO Code. There have been reports of international recruiters direct advertising to try and recruit scarce health care staff from low- and lower middle- income countries in Africa, Asia and the Caribbean, in breach of the Code.[168] Monitoring must be an integral element in the process, to prevent damaging impacts of over-recruitment in countries with vulnerable nurse supply.

4. Retain to Sustain: Burnout and reduced nurse retention during the pandemic

4.1 Why improved nurse retention during the pandemic is vital

Every time a nurse leaves a health care organisation there is an impact on the nurse, on the health care organisation, and on the client population of the organisation. There will be organisational costs, and, where nurse retention is poor, there will be negative impacts on patient care, and on the workload of nurses who remain.

Employers should act on nurse retention challenges because they have a duty of care for their workforce. In addition, they should respond because it is in their own interests. Nurse turnover costs are a significant drain on organisations. Studies have examined the various impacts when nurses leave the organisation, such as temporary replacement costs, cost of hiring a replacement, and lost productivity, and attributed a financial value to each element. At the level of the individual nurse, turnover cost has been estimated to be equivalent to 1.3 times the salary of a departing nurse.[169] At aggregate level, the turnover costs to a health care organisation can be significant.[170] [171] [172] A recent report from the US highlighted that each percent change in nurse turnover will cost (or save) the average hospital an additional $328,400.[173] Another recent US study estimated that a hospital spends an expected $16,736 per nurse per year employed on nurse burnout-attributed turnover costs.[174]

The COVID-19 pandemic has been a major disruptor of nurse retention, and contributes to risks of higher nurse turnover, with associated negative patient care impact and increased organisational costs. As noted earlier in this brief, the pandemic has required many nurses to take on more work, more responsibilities and new skills, to move to other work areas, to deal with high pressure and sometimes unsafe work environments, and to be the trusted face of the “front line” workforce. These pressures happened virtually overnight. Any pre-existing understaffing and resource limitations have been exposed and amplified by the pandemic, and have added to the stress and workload of the nurses who are at work. In addition, the pandemic has directly impacted nurses as people — they have suffered higher than average incidence of infection, illness and mortality rates, whilst also carrying the pressures of trying to avoid infecting friends and families.

Improved retention of nurses must be a key policy goal of any health system that hopes to “build back better” and must be combined with a broader approach to supporting nurse workforce sustainability.

In high-income destination countries, any improvement in retention would reduce the need to rely on international inflow, limit their exposure to any further international supply constraints, and could contribute to improved nurse self-sufficiency. In source countries, improved retention can lead to improved and stable staffing levels, and effective retention

policies can reduce the out-migration "push" factors of inadequate pay and career prospects. In all these cases, improved retention can link to better staffing and more cost- effective care.

The pandemic-related nurse retention challenge is pronounced. It assumes that retention can be improved (or at least maintained) in a workforce that is increasingly showing high levels of burnout, absence and the need for reduced working hours, respite or early retirement, as a result of front-line working during the pandemic. The ageing profile of nurses in many countries also must be taken into account, which will lead to higher retirement rates irrespective of the impact of COVID-19.

4.2 Policy responses to improve nurse retention during the pandemic

Maintaining effective retention of nurses should be the cornerstone of an effective nurse workforce strategy. Keeping scarce and vitally skilled staff for as long as possible is a more effective, and less costly organisational response than having to replace them. As noted earlier, the pandemic has heightened the prospect of this vicious cycle of an organisation having poor retention rates, causing lower staffing, leading to poorer retention.

In 2018, ICNM published a policy brief on nurse retention, which included an evidence review.[175] The evidence review has been updated in this section to take account of significant additional studies published since then, both multi-country reviews,[176] [177] [178] [179] [180] [181] and country specific research, from e.g **Indonesia,[182] the Republic of Korea,[183] Malaysia[184] and Namibia.[185]** Key points from the reviews:

- Analysis of the impact of the pandemic on nurse retention is beginning to emerge, with extremely worrying findings. There will be **reductions in retention** because of COVID-19 driven ill health, burnout, absence, reduced working hours, and early retirement, which **will exacerbate existing nurse workforce shortages.**

- The factors that contribute to nurse retention are usually influenced both by **organisational and by individual factors.** The impact of COVID-19 has in many situations led to individual nurses having to "cope" and "be resilient" with unbearable burdens and inadequate support. Employers and organisations must take responsibility and provide supportive conditions. The evidence on nurse burnout "clearly does not support interventions to reduce burnout that are targeted at individual behaviours – such as mindfulness or resilience training – but, rather, at those that aim to fix mismatches in the work environment."[186]

- A range of organisational factors are identified in the evidence, which impact on nurse satisfaction, turnover, or retention (see Box 3 below). **Many of these factors have been magnified and worsened during the pandemic, and new factors have been created by the pandemic.**

Box 3: Pre-existing factors, and pandemic factors, that impact on nurse retention

Pre-existing factors:

- Work environment, working relationships, and working conditions
- Pay, other financial and non-financial incentives
- Flexibility and "family friendly" policies
- Career opportunities and access to education
- Manageable workload and safe staffing levels
- Productive working relationships with other staff and teams
- Professional autonomy and participation in decision-making
- Responsive management, effective supervision and focused mentoring
- Job mobility and relative job opportunities in different organisations, sectors, regions and countries

Pandemic factors:

- Access to full vaccines
- Access to effective PPE
- Provision of appropriate training during redeployment
- Support for respite/time off
- Support for health/wellbeing

Box 3 provides a starting point checklist in determining what actions and interventions should be used to address the nurse retention challenge. Three vital and universal policy interventions that will improve retention, and will demonstrate that employing organisations are supporting their staff are to ensure **adequate staffing levels**; to provide **attractive working conditions, pay and career opportunities**; and to ensure that **nurses have priority access to full vaccinations.** Other interventions will also be required; these will vary depending on context and priorities.

Policy makers and NNAs must draw from the evidence base summarised in Box 3 to identify "what works" for nurse retention, by systematically identifying the options for intervention that will meet the identified nurse retention problems and priorities in their own area of responsibility. Sustained success in improving nurse retention is likely to be related to planned, sequenced, multi- policy intervention — so called "bundles" of linked policies, rather than single interventions. Annex 1 gives examples of data for monitoring retention; Annex 2

provides a specific example of “bundled” recommendations, targeted at retaining older nurses.

Identifying the most effective balance of policies to improve retention of nurses is in part about taking account of the pandemic impact, experiences and motivations of the nurses. This is why a **nurse workforce impact assessment** approach, as set out in Chapter 2, can be an important underpinning of effective nurse workforce retention and sustainability.

5. An Action Agenda for 2022 and Beyond: Sustaining and retaining the nurse workforce during the COVID-19 pandemic

The nursing workforce has been central to COVID-19 response effectiveness in all countries. This brief has highlighted that the effects of COVID-19 are increasing the demand for nurses, but are also having damaging direct and indirect effects on individual nurses, and on overall nurse supply. There were estimated to be a global nurse shortfall of almost six million as the pandemic hit in early 2020. COVID-19 has exposed the vulnerabilities of nurse supply flows, domestically and internationally, and at the time of publishing this brief in January 2022 it is all too evident that the latest Omicron variant is surging around the globe and having further severe impacts on an already understaffed and overstretched global nursing workforce.

The growing risk is that COVID-19 is driving up significantly the pre-pandemic 5.9 million global shortfall of nurses, and may also increase the unequal distribution of nurses and push up international flows of nurses from low-/middle-income countries to high-income countries. This will undermine both country-level progress towards rebuilding after the pandemic shock, and could prevent the attainment of UHC in some countries, as well as compromising the overall global response to the Omicron variant and any future pandemic waves.

To mitigate these damaging effects, and to improve longer-term nurse workforce sustainability, there is an urgent need for effective and co-ordinated policy responses both at the national level, and internationally/globally. This response must include both immediate action to meet the urgent challenges set out in this brief, and the development of a shared longer-term vision and plan for the global nursing workforce, to ensure that the world is better placed to meet future major health shocks.

At country level, nurse workforce sustainability should be the goal. It can be achieved by focusing on two inter-related policy priorities: to ensure adequate domestic training capacity, and to improve retention of domestically trained nurses. This requires:

- **Act: Commitment to support for safe staffing levels.** Dangerously low levels of nurse understaffing have been a major problem in many health systems during the pandemic— it magnifies the burnout risk for those nurses who remain working in the system, compromises patient care, and will be a driver for increased outflow of staff. There are many methodologies that can be applied to determine staffing needs — commitment to consistent application of a staffing method and necessary resource allocation are key indicators of health system good governance.
- **Act: Commitment to support for early access to full vaccinations programmes for all nurses.** Without this protection for the nursing workforce, all other interventions to improve sustainability risk being undermined.

- **Act: Nurse workforce impact assessments, conducted regularly,** in order to develop a better understanding of pandemic impact on individual nurses and the overall nursing workforce. The data generated from impact assessments would improve policy and planning of the profession, optimise the retention and deployment of nurses, enhance utilisation of their skills, support monitoring of internal flows of nurses, and identify priority actions for future recruitment and retention. They could also be a national component in a country-led approach to developing a much-needed update of the State of the World's Nursing (SOWN)(see below)
- **Plan: Reviewing/ expanding the capacity of the domestic nurse education system** to meet demand and to sustain long-term nurse supply. This should be based on data generated from impact assessments and from a regular and systematic national nurse labour market analysis, which includes demand-led assessment of the projected size, skill profile and deployment of the future nursing workforce, and agreed approaches to filling any identified gaps, through adjustments in supply and in curriculum.
- **Plan: Assessing/ improving retention of nurses and the attractiveness of nursing as a career**, by ensuring that the damaging effect of COVID-19 burnout of nurses is addressed, and by the provision of fair pay and conditions of employment, structured career opportunities, and access to continuing education.
- **Plan: Implementing policies to enable the nursing workforce contribution to pandemic response to be optimised** through supporting advanced practice and specialist roles, effective skill mix and working patterns, teamworking and provision of appropriate technology and equipment, including training in its use. This will contribute to retention and attractiveness of nursing, and should include a focus on having an enabling regulatory and legislative framework.
- **Plan: Monitoring and tracking nurse self -sufficiency.** The self-sufficiency indicator of level of percentage reliance on foreign-born or foreign-trained nurses gives national policy makers an insight into the extent of their dependence on (and potential vulnerability to) international nurse supply. It enables the country to track and demonstrate progress to meeting the milestone commitment of the Global Strategy on Human Resources for Health 2030,[187] and reporting on implementation of the WHO Codef.[188]

At international level the policy response must be driven by recognition that the nursing workforce in lower income countries, already vulnerable and often understaffed, has been further damaged by the impact of the pandemic. Attainment of UHC is at risk in some countries. These countries will continue to be highly vulnerable to international outflow of nurses, even if they succeed in implementing domestic polices to improve nurse supply. These countries at risk need to be backed up by the international community. Key

international stakeholders, such as WHO, the OECD, the World Bank, and ICN must act now, but they must also develop and agree a vision and long-term, ten-year Plan for sustaining the global nursing workforce.

This long-term **Plan** must focus both on rebuilding and investing in necessary growth in the global nursing workforce. It should align with the more immediate **Actions** set out in this policy brief in order to set out the necessary ten-year commitments to achieving a sustainable global nursing workforce. The pandemic has changed the world and has exposed the terrible risks of nursing shortages, but has also re-affirmed that "health is wealth"— that countries must invest in their health systems if they aim to support vibrant economies. Existing global instruments and health workforce strategies, such as the WHO Global Strategy on Human Resources for Health[189] and the UN High Level Commission on Health Employment and Economic Growth[190] reflect the pre-pandemic world. These can continue to provide a broad frame for future strategy, but clearly need to be updated to take account of pandemic impact.

For nursing, the workforce challenge is too big and too "different" from that which existed only two years ago to be ignored. There must be a co-ordinated effort by international stakeholders and countries to develop a long-term, ten-year plan to aim for a sustainable global nursing workforce. We cannot risk more damage to an already impaired workforce, and we cannot revert to the pre-pandemic situation of "living with" extensive nursing shortages. We need a Plan. The necessary actions, both immediate, and in support of developing this ten-year Plan, which must be considered and co-ordinated between countries and international stakeholders include:

- **Act: Supporting an immediate update of the State of the World's Nursing (SOWN) analysis.** SOWN 1 was published in early 2020 and describes the pre-pandemic profile of the global nursing workforce. It is a useful benchmark, but the world is forever changed because of the pandemic. As we enter the third year of the pandemic, there is an urgent need for SOWN 2: an updated global profile of the nursing workforce during the pandemic, to assess the damage done, and the scope for targeted action on sustainability and renewal.
- **Plan: Commitment to support for early access to full vaccinations programmes for all nurses, in all countries.** International co-operation is required to protect the nursing workforce in all countries.
- **Plan: Commitment to implementing and evaluating effective and ethical approaches to managed international supply of nurses**, through a collective approach framed within a fuller implementation of the WHO Global Code of Practice on the International Recruitment of Health Personnel.[191] This must focus on improved monitoring of international flows of nurses, independent monitoring of the use of country-to-country

bilateral agreements and recruitment agencies to ensure compliance, and with fair and transparent recruitment and employment practices. The evidence base on the implementation of these policies is currently inadequate to inform effective policy, and urgently requires improvement.

- **Plan: Commitment to supporting regular and systematic nurse workforce impact assessments, particularly in resource constrained countries,** by the provision of technical advice, data improvement, independent analysis, and multi-stakeholder policy dialogues to agree priority policy actions on domestic nurse supply and retention.
- **Plan: Commitment to investing in nurse workforce sustainability in small states, lower-income states and fragile states, most vulnerable to nurse outflow, and impacted by the pandemic,** by building on the lessons of the UN High Level Commission on Health Employment and Economic Growth,[192] and of the WHO Strategic Directions on Nursing and Midwifery which demonstrate the long-term economic, social and population health benefits of investing in the nursing workforce.

Act and Plan. There is need for both urgent action and a shared long-term vision and plan for the global nursing workforce. The COVID-19 pandemic has already caused unprecedented damage to the global nursing workforce, and is creating further harm in 2022. Without sufficient well-motivated and supported nurses, the global health system cannot function. A co-ordinated policy response at country level and internationally is urgently needed to meet the 2022 Action Agenda and to develop a longer-term Plan: to improve nurse retention and give hope for the future sustainability of the profession.

Annex 1: Nurse workforce impact assessment indicators

Several workforce indicators can be used to assess nurse retention, and can be an integral part of nurse workforce impact assessment. (See the WHO Handbook[193] and recent reviews of health workforce attrition[194] [195] for more details on analytical approaches and their limitations).

Table A.1 below sets out commonly used indicators of nurse retention.

Table A.1: Typology of commonly used nurse retention indicators

Indicator	Common form of calculation	Strengths/ Limitations
Turnover	Turnover, and the alternate terms of "attrition"[196] or "wastage",[197] is usually expressed in terms of the % of nurse staff of a particular workplace or system who have left the organisation (or have moved jobs) within the last 12 months. This is sometimes called the "crude" annual turnover rate: ***The number of 'leavers' divided by the average number of staff in post in the year.*** Other measures include: survival probabilities;[198] median survival (years), survival analysis, attrition in first years after graduation.	The nurse turnover rate, however measured, is the most common measure of "retention" (or lack of it). Voluntary and involuntary turnover must be differentiated; internal and external destinations of voluntary "leavers" should be differentiated.
Stability	Examining nurse workforce stability focuses on the same underlying issue of retention of nurses but takes the perspective of focusing on those who stay rather than those who leave. High levels of staff stability, or retention, are the opposite of high turnover, and may be positively associated with the level and quality of health care available.[199]	The choice to stay, when there is an option to leave, may indicate that the work environment is meeting nurse workforce needs. Stability may be a helpful indicator of positive retention but assumes that there is a "choice" being made by the nurse to stay or leave.

	Stability index 1 – the percentage of staff who were in substantive posts at the beginning of Year 1 and who were still in substantive posts in that organisation a year later.	
Absence	Nurse workforce absenteeism has been reported as a barrier to improvement of health outcomes in low- and middle-income countries,[200] [201] and has been a critical feature of many systems during the pandemic. ***"Crude" absence rate: time lost due to absence as a percentage of contracted working time in a defined period.*** Other measures in use include the average duration per spell of absence, and the average duration of absence per person.	Absence rates can be simple to calculate; analysing absence rates by different staff groups, department or function can help to identify particular problem areas. A main limitation is that the comparison of absence rates in different units can give rise to false conclusions if basic measures such as number of absences and duration of absences, are not also provided.
Applicants	***Number of "suitably qualified" applicants for designated nurse jobs/posts***	This indicator of "attractiveness" of posts can be used to assess "fill rate"—the percentage of posts that are filled by suitably qualified nurse personnel. The % rate may be compared with other parts of the health system to assess the relative "problem" of recruitment in specific areas (e.g. rural/remote areas).
Vacancies	If funded nursing jobs/posts are left unfilled, this may reflect that the post is not attractive to workers, because of working conditions, geographic location, or if the recruiting organisation has a poor reputation. The rate of vacant posts may	Some organisations deliberately leave nurse jobs/posts vacant to save on recruitment costs which undermines the use of vacancy rates as a shortage indicator; if

	be an indicator of relative attractiveness and unattractiveness of different jobs, locations and organisations, and as such the vacancy rate has scope to be used as an indicator. ***The number of funded posts that are unfilled expressed as a percentage of total posts – e.g. a percentage of vacancy rate.***	vacant posts cannot be filled, they may be removed, "hiding" the problem of the shortage.

References: (see [202] [203] [204] for more detail)

These indicators of nurse retention are, at best, of partial utility and must be used and interpreted with caution. All require frequency of use if they are to be used to track trends, which are much more useful than single "point in time measures". Many have optional methods of calculation which can constrain comparison if different measures are used in different sites or at different times. These methodological limitations can also be compounded by constraints in interpreting the data as clear-cut indicators of nurse workforce behaviour. For example, low nurse turnover may just reflect an absence of alternative employment for nurses rather than high job satisfaction; high nurse absence may reflect travel access problems rather than a lack of motivation; maintaining a high level of nurse job vacancies may be a deliberate cost-cutting exercise.

Minimum data sets (MDS) and National Health Workforce Accounts (NHWA)

There are current WHO recommendations for a national health workforce account (NHWA)[205] and minimum data set (MDS) for health workforce registry[206] which would contain various elements that are relevant to this area of policy support action.

Annex 2: Retaining older nurses during the pandemic

Many countries, notably those in the higher-income OECD, have an ageing nursing workforce. Pre-pandemic, this had already been recognised as having major implications for retention, with a huge replacement challenge. COVID-19 has accelerated concerns about the retention of older nurses, many of whom have experienced heavy workload and burnout. Older nurses are more likely to have additional skills, and advanced practice or specialist qualifications. They all have irreplaceable experience. Policies need to be in place to enable these individual nurses to continue to be active members of the profession for as long as they wish.

The pre-pandemic estimate from SOWN was that one in six (17%) of the professional nurses around the world were expected to retire within the next 10 years.[207] It was clear that action was required to improve the retention of older nurses. Responding to this challenge, ICNM published a synthesis review of evidence and policy recommendation for retaining older nurses in 2020.[208] The synthesis of international evidence was used to develop a 10-point plan for supporting older nurses (Table A.2). The pandemic has impacted on older nurses in the workforce, and is likely to accelerate retirement, which makes these action points even more necessary.

Table A.2 : 10-point plan for supporting older nurses

1. **Understand the workforce profile and employment needs of older nurses by conducting surveys, focus groups and nurse labour market analysis**
2. **Avoid age bias in recruitment and employment practices**
3. **Provide flexible working opportunities that meet older nurses' requirements**
4. **Ensure that older nurses have equal access to relevant learning and career opportunities**
5. **Ensure that occupational health and safety policies enable staff well being**
6. **Support job re-design to reduce heavy workload and stress, and support job enrichment, in order to optimise contribution of older nurses**
7. **Maintain a pay and benefits system that meets older nurses' needs, and rewards experience**
8. **Support older nurses in advanced and specialist practice, mentorship and preceptor roles**
9. **Maintain succession planning to enable knowledge transfer and leadership development**
10. **Provide retirement planning options, and, where appropriate, flexible pension provision**

References

[1] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020
[2] WHO (2020) Managing health workforce migration - The Global Code of Practice. WHO, Geneva. https://www.who.int/hrh/migration/code/practice/en/ (Accessed 18 May, 2020)
[3]WHO (2016) Working for health and growth: investing in the health workforce. Report of the High-Level Commission on Health Employment and Economic Growth. Geneva. https://apps.who.int/iris/bitstream/handle/10665/250047/9789241511308-eng.pdf?sequence=1
[4] Mancini D et al (2021) Covid cases reach a high in 20 countries. Financial Times, 31 December, p8.
[5] Lintern S, Pogrund G (2022) NHS struggles as sickness takes out 1 in 10 staff. The Times, 2 January. https://www.thetimes.co.uk/article/115e417c-6b47-11ec-bb37-1b2eed73c283?shareToken=2207c3e9ac71d5e7a38878abfa13f532
[6]Mosleh O (2021) I can't even explain to you how hard it is to get up and go to work': Nurses face Omicron, a worker shortage — and shifting rules. Toronto Star https://www.thestar.com/news/canada/2021/12/31/we-knew-the-numbers-were-a-problem-nursing-shortage-laid-bare-as-health-systems-face-omicron.html
[7] Boston Herald/ AP (2021) Omicron is latest blow to pandemic-weary front-line workers. December 24. https://www.bostonherald.com/2021/12/24/omicron-is-latest-blow-to-pandemic-weary-front-line-workers/
[8] Visontay E (2021) NSW hospitals resort to flying nurses in from overseas as staff are begged to take extra shifts amid Covid crisis. The Guardian online, 31 December. https://www.theguardian.com/australia-news/2022/jan/01/nsw-hospitals-resort-to-flying-nurses-in-from-overseas-as-staff-are-begged-to-take-extra-shifts-amid-covid-crisis
[9]ICN (2021) ICN says 115,000 healthcare worker deaths from COVID-19 exposes collective failure of leaders to protect global workforce. ICN Geneva, 21st October. https://www.icn.ch/news/icn-says-115000-healthcare-worker-deaths-covid-19-exposes-collective-failure-leaders-protect
[10] See e.g Fernandez, R., Lord, H., Halcomb, E., Moxham, L., Middleton, R., Alananzeh, I., & Ellwood, L. (2020). Implications for COVID-19: a systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *International journal of nursing studies*, *111*, 103637; Galanis, P., Vraka, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. Journal of advanced nursing.
[11] WHO (2021) The impact of COVID-19 on health and care workers: a closer look at deaths. Health Workforce Department – Working Paper 1. Geneva: World Health Organization; September 2021
[12] WHO (2021)Second round of the national pulse survey on continuity of essential health services during the COVID-19 pandemic. Geneva: WHO, 2021 https://www.who.int/publications/i/item/WHO-2019-nCoV-EHS-continuity-survey-2021.1
[13] ICN (2020) Immediate and serious threat: ICN calls on WHO member states to collect and share data on health worker COVID-19-19 infection rates and deaths. May 18th. ICN, Geneva.
[14] Gilbert L, Lilly A (2021) Independent Review COVID-19 outbreaks in Australian Residential Aged Care Facilities - no time for complacency -Department of Health, Australia. https://www.health.gov.au/resources/publications/coronavirus-covid-19-independent-review-of-covid-19-outbreaks-in-australian-residential-aged-care-facilities
[15] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020

[16] ICN (2021) ICN says 115,000 healthcare worker deaths from COVID-19 exposes collective failure of leaders to protect global workforce. ICN Geneva, 21st October. https://www.icn.ch/news/icn-says-115000-healthcare-worker-deaths-covid-19-exposes-collective-failure-leaders-protect
[17] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020
[18] Holloway A., Thomson A., Stilwell B., Finch H., Irwin K., Crisp N. 'Agents of Change: the story of the Nursing Now Campaign' Nursing Now/Burdett Trust for Nursing, 2021.
[19] SDNM
[20] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020
[21] E.g Maier C et al (2020) What strategies are countries using to expand health workforce capacity to treat Covid-19 19 patients? WHO European Observatory, Brussels. April 23 2020 https://analysis.Covid-1919healthsystem.org/index.php/2020/04/23/what-strategies-are-countries-using-to-expand-health-workforce-surge-capacity-to-treat-Covid-19-19-patients/
[22] Gupta N, Balcom SA, Gulliver A, Witherspoon RL. (2021) Health workforce surge capacity during the COVID-19 pandemic and other global respiratory disease outbreaks: A systematic review of health system requirements and responses. Int J Health Plann Manage;36:26–41.
[23] World Health Organisation (2021) Impact of COVID-19 on human resources for health and policy response: the case of Plurinational State of Bolivia, Chile, Colombia, Ecuador and Peru. Overview of findings from five Latin American countries, page 22. Geneva: WHO [Impacto de la COVID-19 en los recursos humanos para la salud y respuesta de política: el caso del Estado Plurinacional de Bolivia, Chile, Colombia, Ecuador y el Perú. Síntesis de hallazgos en cinco países de América Latina]
[24] Maier C et al (2020) What strategies are countries using to expand health workforce capacity to treat Covid-19 19 patients? WHO European Observatory, Brussels. April 23 2020 https://analysis.Covid-1919healthsystem.org/index.php/2020/04/23/what-strategies-are-countries-using-to-expand-health-workforce-surge-capacity-to-treat-Covid-19-19-patients/ (accessed 27 May 2020)
[25] Batalova, Jeanne and Michael Fix.(2020). As U.S. Health-Care System Buckles under Pandemic, Immigrant & Refugee Professionals Could Represent a Critical Resource. Migration Policy Institute commentary, April 2020 https://www.migrationpolicy.org/news/us-health-care-system-coronavirus-immigrant-professionals-untapped-resource (accessed May 17th 2020)
[26]McLaughlin (2020) The Fragility of the Global Nurse Supply Chain. The Atlantic Journal, April 30th https://www.theatlantic.com/international/archive/2020/04/immigrant-nurse-health-care-coronavirus-pandemic/610873/ (accessed May 18 2020)
[27] San Juan, N. V., Camilleri, M., Jeans, J. P., Monkhouse, A., Chisnall, G., & Vindrola-Padros, C. (2021). Redeployment and training of healthcare professionals to Intensive Care during COVID-19: a systematic review. *MedRxiv*.
[28] Tangcharoensathien V, Wisawatpanimit P, Chanprasobpol B (2021) REPORT ON AUGUST-NOVEMBER 2020 AAAH CONFERENCE AND WEBINAR SERIES: Addressing healthcare workers challenges in response to COVID 19: Sharing experiences and drawing countries lessons. Publishing Office, International Health Policy Program (IHPP), Thailand
[29] Llop-Gironés, A., Vračar, A., Llop-Gironés, G. et al. (2021) Employment and working conditions of nurses: where and how health inequalities have increased during the COVID-19 pandemic?. Hum Resour Health 19, 112
[30] Lee, J., Cho, H. S., & Shin, S. R. (2021). Nursing strategies for the post-COVID-19 era. *International Nursing Review*, *68*(2), 149-152
[31] World Health Organisation (2021) Impact of COVID-19 on human resources for health and policy response: the case of Plurinational State of Bolivia, Chile, Colombia, Ecuador and Peru. Overview of

findings from five Latin American countries. Geneva: WHO [Impacto de la COVID-19 en los recursos humanos para la salud y respuesta de política: el caso del Estado Plurinacional de Bolivia, Chile, Colombia, Ecuador y el Perú. Síntesis de hallazgos en cinco países de América Latina]
[32] Sudre, C. H., Murray, B., Varsavsky, T., Graham, M. S., Penfold, R. S., Bowyer, R. C., ... & Steves, C. J. (2021). Attributes and predictors of long COVID. Nature medicine, 27(4), 626-631.
[33] Bajnok, I., Shamian, J., Catton, H., Skinner, T., & Pavlovic, T. (2018). The role of nurses in immunisation. A snapshot from OECD countries. International Council of Nurses. https://www.icn.ch/sites/default/files/inline-files/IMMUNISATION_Report%20%28002%29.pdf
[34] ICN. (2020). Success of mass COVID-19 vaccination programmes will depend on frontline nurses and nurse leaders at the highest level of government. ICN, Geneva. https://www.icn.ch/news/success-mass-covid-19-vaccination-programmes-will-depend-frontline-nurses-and-nurse-leaders
[35] Burden, S., Henshall, C. and Oshikanlu, R. (2021), Harnessing the nursing contribution to COVID-19 mass vaccination programmes: Addressing hesitancy and promoting confidence. Journal of Advanced Nursing, 77: e16-e20. https://doi.org/10.1111/jan.14854
[36] Evans N (2021) Nurses take the lead in the biggest vaccine roll-out in UK history. Nursing Standard, 36
(1) (Jan 13, 2021).
[37] Goldberg S, Lavon E (2021). The Israeli vaccination workforce has been led and managed by the nursing profession. In: Buchan et al (2021) Governing health workforce responses during COVID-19. Eurohealth 27 (1) https://eurohealthobservatory.who.int/publications/i/covid-19-and-the-opportunity-to-strengthen-health-system-governance-eurohealth
[38] World Health Organisation (2021) Impact of COVID-19 on human resources for health and policy response: the case of Plurinational State of Bolivia, Chile, Colombia, Ecuador and Peru. Overview of findings from five Latin American countries, page 22. Geneva: WHO [Impacto de la COVID-19 en los recursos humanos para la salud y respuesta de política: el caso del Estado Plurinacional de Bolivia, Chile, Colombia, Ecuador y el Perú. Síntesis de hallazgos en cinco países de América Latina]
[39] ANMJ Staff (2021) We have the nurses. We have the expertise': Peak bodies call for nurse practitioners to be utilised in COVID-19 vaccination rollout. Australian Nursing and Midwifery Journal. 30 July. https://anmj.org.au/we-have-the-nurses-we-have-the-expertise-peak-calls-for-nurse-practitioners-to-be-utilised-in-covid-19-vaccination-rollout/
[40] ICN (2021) ICN supports WHO's Vaccine Equity Declaration, warning that delay to global roll out of vaccines potentially catastrophic. https://www.icn.ch/news/icn-supports-whos-vaccine-equity-declaration-warning-delay-global-roll-out-vaccines
[41]ICN (2021) ICN calls for urgent action to increase efforts to vaccinate healthcare workers in Africa as figures reveal that only one in ten are fully vaccinated. ICN, Geneva. September 30. https://www.icn.ch/news/icn-calls-urgent-action-increase-efforts-vaccinate-healthcare-workers-africa-figures-reveal
[42] Lee, J., Cho, H. S., & Shin, S. R. (2021). Nursing strategies for the post-COVID-19 era. *International Nursing Review*, *68*(2), 149-152.
[43] Rowlands SL (2021) Understanding and mitigating moral injury in nurses. Nursing Standard. doi: 10.7748/ns.2021.e11703
[44] Gómez-Ibáñez, R., Watson, C., Leyva-Moral, J. M., Aguayo-González, M., & Granel, N. (2020). Final-year nursing students called to work: Experiences of a rushed labour insertion during the COVID-19 pandemic. Nurse Education in Practice, 49, 102920.
[45] Ulenaers, D., Grosemans, J., Schrooten, W., & Bergs, J. (2021). Clinical placement experience of nursing students during the COVID-19 pandemic: A cross-sectional study. Nurse education today, 99, 104746.

[46] Roca, J., Canet-Vélez, O., Cemeli, T., Lavedán, A., Masot, O., & Botigué, T. (2021). Experiences, emotional responses, and coping skills of nursing students as auxiliary health workers during the peak COVID-19 pandemic: A qualitative study. International Journal of Mental Health Nursing.
[47] Adelson P, Fish J, Peters MDJ, Corsini N, Sharplin G, Eckert M. (2021) COVID-19 and workforce wellbeing: A survey of the Australian nursing, midwifery, and care worker workforce. A report prepared for the Australian Nursing and Midwifery Federation. Adelaide, SA: University of South Australia, 2021. DOI: 10.25954/6098c87b12e96
[48] Halcomb, E., McInnes, S., Williams, A., Ashley, C., James, S., Fernandez, R., Stephen, C. and Calma, K. (2020), The Experiences of Primary Healthcare Nurses During the COVID-19 Pandemic in Australia. Journal of Nursing Scholarship, 52: 553-56
[49] Bruyneel, A., Smith, P., Tack, J., & Pirson, M. (2021). Prevalence of burnout risk and factors associated with burnout risk among ICU nurses during the COVID-19 outbreak in French speaking Belgium. *Intensive and Critical Care Nursing*, *65*, 103059
[50] Magalhães, A. M. M. D., Trevilato, D. D., Pai, D. D., Barbosa, A. D. S., Medeiros, N. M., Seeger, V. G., & Oliveira, J. L. C. D. (2021). Professional burnout of nursing team working to fight the new coronavirus pandemic. Revista Brasileira de Enfermagem, 75.
[51] Lavoie-Tremblay, M., Gélinas, C., Aubé, T., Tchouaket, E., Tremblay, D., Gagnon, M. P., & Côté, J. (2021). Influence of caring for COVID-19 patients on nurse's turnover, work satisfaction, and quality of care. Journal of Nursing Management. doi: 10.1111/jonm.13462
[52] Havaei, F., Ma, A., Staempfli, S., & MacPhee, M. (2021, January). Nurses' Workplace Conditions Impacting Their Mental Health during COVID-19: A Cross-Sectional Survey Study. In Healthcare (Vol. 9, No. 1, p. 84). Multidisciplinary Digital Publishing Institute.
[53] Hong, S., Ai, M., Xu, X., Wang, W., Chen, J., Zhang, Q., ... & Kuang, L. (2021). Immediate psychological impact on nurses working at 42 government-designated hospitals during COVID-19 outbreak in China: A cross-sectional study. Nursing outlook, 69(1), 6-12.
[54] El-Monshed, A. H., Amr, M., Ali, A. S., Elmasry, Y. M., & Zoromba, M. (2021). Nurses' knowledge, concerns, perceived impact and preparedness toward COVID-19 pandemic: A cross-sectional survey. International Journal of Nursing Practice, e13017.
[55] Pförtner T, Pfaff H, Hower K (2021) Will the demands by the covid-19 pandemic increase the intent to quit the profession of long-term care managers? A repeated cross-sectional study in Germany, Journal of Public Health, Volume 43, Issue 3, September 2021, Pages e431–e434
[56] Jose, S., Dhandapani, M., & Cyriac, M. C. (2020). Burnout and resilience among frontline nurses during COVID-19 pandemic: A cross-sectional study in the emergency department of a tertiary care center, North India. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*, *24*(11), 1081.
[57] Mirzaei, A., Rezakhani Moghaddam, H., & Habibi Soola, A. (2021). Identifying the predictors of turnover intention based on psychosocial factors of nurses during the COVID-19 outbreak. Nursing Open
[58] Lambert S, Mahon A (2021) An exploration of the wellbeing of nurses and midwives in Ireland: A research project to inform the 'Let's Talk About It' mental health collective for INMO members. INMO, Dublin.
[59] Lamptey, E. (2020). Psychological impacts of COVID-19 on health professionals: a cross-sectional survey of 1000 nurses across ECOWAS countries. Research Journal in Medicine and Health Sciences, *1*(1).

[60] Japanese Nursing Association (2021) Survey Results on the Actual Status of Nurses' Responses to COVID-19 JNA News Release 2021.March Vol.34 https://www.nurse.or.jp/jna/english/news/pdf/2021nr_34.pdf
[61] Alameddine, M., Clinton, M., Bou-Karroum, K., Richa, N., & Doumit, M. A. (2021). Factors Associated With the Resilience of Nurses During the COVID-19 Pandemic. Worldviews on Evidence-Based Nursing.
[62] See e.g Heesakkers, H., Zegers, M., van Mol, M. M., & van den Boogaard, M. (2021). The impact of the first COVID-19 surge on the mental well-being of ICU nurses: A nationwide survey study. *Intensive and Critical Care Nursing*, 103034.
[63] Al Maqbali, M., & Al Khadhuri, J. (2021). Psychological impact of the coronavirus 2019 (COVID-19) pandemic on nurses. *Japan Journal of Nursing Science*, e12417.
[64] Labrague, L. J., & de Los Santos, J. A. A. (2021). Fear of Covid-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *Journal of nursing management*, *29*(3), 395-403.
[65] Nashwan, A. J., Abujaber, A. A., Villar, R. C., Nazarene, A., Al-Jabry, M. M., & Fradelos, E. C. (2021). Comparing the Impact of COVID-19 on Nurses' Turnover Intentions before and during the Pandemic in Qatar. Journal of Personalized Medicine, *11*(6), 456.
[66] Shin, K.L. (2020) *A survey of unfair treatment among nurses related to COVID-19*. Korean Nurses Association. News 15 May. Available at: http://www.koreanurse.or.kr/board/board_read.php?board_id=press&member_id=admin&exec=&no=348&category_no=&step=0&tag=&sgroup=338&sfloat=&position=3&mode=&find=&search= (in Korean)
[67] Jun-Hee B, Aeyoung S, Soo Jung C, Sunah P. (2021) Factors Influencing the Turnover Intention of COVID-19 Ward and General Ward Nurses in Public Hospitals.Korean Journal of Occupational Health Nursing 2021;30:46-56
[68] Tshivhase, L., Ndou, N. D., Risenga, P. R., Moyo, I., Mudau, T. S., Mboweni, S., & Mavhandu-Mudzusi, A. H. Human resource challenges experienced by nurse managers at a South African rural district hospital during COVID-19 pandemic. https://www.pulsus.com/scholarly-articles/human-resource-challenges-experienced-by-nurse-managers-at-a-south-african-rural-district-hospital-during-covid19-pandemic-8753.html
[69] Pérez-Raya, F., Cobos-Serrano, J. L., Ayuso-Murillo, D., Fernández-Fernández, P., Rodríguez-Gómez, J. A., & Almeida Souza, A. (2021). COVID-19 impact on nurses in Spain: a considered opinion survey. *International nursing review*. 68(2):248-255.
[70] Chen, R., Sun, C., Chen, J. J., Jen, H. J., Kang, X. L., Kao, C. C., & Chou, K. R. (2021). A large-scale survey on trauma, burnout, and posttraumatic growth among nurses during the COVID-19 pandemic. *International journal of mental health nursing*, *30*(1), 102-116.
[71] Kabunga, A., & Okalo, P. (2021). Prevalence and predictors of burnout among nurses during COVID-19: a cross-sectional study in hospitals in central Uganda. *BMJ open*, *11*(9), e054284.
[72] Royal College of Nursing (2021) Employment Survey 2021.RCN, London. https://www.rcn.org.uk/professional-development/publications/employment-survey-2021-uk-pub-010-075
[73] Sinsky, C. A., Brown, R. L., Stillman, M. J., & Linzer, M. (2021). COVID-Related stress and work intentions in a sample of US health care workers. Mayo Clinic Proceedings: Innovations, Quality & Outcomes, 5(6), 1165-1173.
[74] Gretchen B, Lapointe M, Murphy M, Viscardi, M (2021) Nursing in 2021: Retaining the healthcare workforce when we need it most. McKinsey and Co. https://www.mckinsey.com/industries/healthcare-

systems-and-services/our-insights/nursing-in-2021-retaining-the-healthcare-workforce-when-we-need-it-most

[75] Raso, R, Fitzpatrick, J; Masick, K. (2021) Nurses Intent to Leave their Position and the Profession During the COVID-19 Pandemic, JONA: The Journal of Nursing Administration: October 2021 - Volume 51 - Issue 10 - p 488-494

[76] Williams G et al (2020). How are countries supporting the mental health and wellbeing of their health workforce? WHO European Observatory, Brussels. May 21 2020 https://analysis.Covid-1919healthsystem.org/index.php/2020/05/21/how-are-countries-supporting-the-mental-health-and-wellbeing-of-their-health-workforce/

[77] Joo, J. Y., & Liu, M. F. (2021). Nurses' barriers to caring for patients with COVID-19: a qualitative systematic review. *International nursing review*, *68*(2), 202-213.

[78] Jo, S., Kurt, S., Bennett, J. A., Mayer, K., Pituch, K. A., Simpson, V., ... & Reifsnider, E. (2021). Nurses' resilience in the face of coronavirus (COVID-19): An international view. *Nursing & Health Sciences*

[79] Llop-Gironés, A., Vračar, A., Llop-Gironés, G. *et al.* (2021) Employment and working conditions of nurses: where and how health inequalities have increased during the COVID-19 pandemic?. *Hum Resour Health* 19, 112.

[80] ECSACON (2021) 14th Scientific Conference: Nurses and Midwives responding to global Health Challenges of the 21st century. The East, Central and Southern Africa College of Nursing. Tanzania: Arusha. http://ecsacon.org/index.php/ecsacon-14th-scientific-conference/

[81] Galanis, P., Vraka, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. Journal of advanced nursing.

[82] De Kock, J.H., Latham, H.A., Leslie, S.J. et al. (2021) A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. BMC Public Health 21, 104 . https://doi.org/10.1186/s12889-020-10070-3

[83] Falatah,R (2021). The Impact of the Coronavirus Disease (COVID-19) Pandemic on Nurses' Turnover Intention: An Integrative Review. Nursing Reports 11, no. 4: 787-810. https://doi.org/10.3390/nursrep11040075

[84] Franklin P, Gkiouleka A. (2021) A Scoping Review of Psychosocial Risks to Health Workers during the Covid-19 Pandemic. International Journal of Environmental Research and Public Health, 18(5):2453.

[85] Lasater KB, Aiken LH, Sloane DM, et al (2021) Chronic hospital nurse understaffing meets COVID-19: an observational study. BMJ Quality & Safety 2021;30:639-647.

[86]Dall'Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: a theoretical review. Human resources for health, 18, 1-17.

[87] Dall'Ora C, Saville C (2021) Burnout in nursing: what have we learnt and what is still unknown? Nursing Times [online]; 117: 2, 43-44.

[88] Jun, J., Ojemeni, M. M., Kalamani, R., Tong, J., & Crecelius, M. L. (2021). Relationship between nurse burnout, patient and organizational outcomes: systematic review. International Journal of Nursing Studies, 103933.

[89] Garcia, A. S., Carotta, C. L., Brown, R., Da Rosa, P., Pravecek, B., & Carson, P. (2021). Parenting stress, self-efficacy and COVID-19 health risks as predictors of general stress among nurses. International Journal of Nursing Practice, 27(6),

[90] Kisely S, Warren N, McMahon L, Dalais C, Henry I, Siskind D et al. Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis BMJ 2020; 369

[91] Roberts, R, Wong, A, Jenkins, S, et al. (2021) Mental health and well-being impacts of COVID-19 on rural paramedics, police, community nurses and child protection workers. Australian Journal of Rural Health; 29: 753– 767. https://doi.org/10.1111/ajr.12804
[92] Gupta, N., Balcom, S. A., Gulliver, A., & Witherspoon, R. L. (2021). Health workforce surge capacity during the COVID-19 pandemic and other global respiratory disease outbreaks: A systematic review of health system requirements and responses. The International Journal of Health Planning and Management, 36(S1), 26-4
[93] WHO (2016) Global strategy on human resources for health: workforce 2030. Para 71. WHO, Geneva.
[94] Nove, A., Cometto, G. & Campbell, J. Assessing the health workforce implications of health policy and programming: how a review of grey literature informed the development of a new impact assessment tool. Hum Resour Health 15, 79 (2017). https://doi.org/10.1186/s12960-017-0252-x
[95] Chan, G. K., Bitton, J. R., Allgeyer, R. L., Elliott, D., Hudson, L. R., & Burwell, P. M. (2021). The impact of COVID-19 on the nursing workforce: a national overview. Online Journal of Issues in Nursing, 26(2), 1-17.
[96] Williams G et al (2020). How are countries supporting the mental health and wellbeing of their health workforce? WHO European Observatory, Brussels. May 21 2020 https://analysis.Covid-1919healthsystem.org/index.php/2020/05/21/how-are-countries-supporting-the-mental-health-and-wellbeing-of-their-health-workforce/
[97] Cohen-Serrins, J. (2021). How COVID-19 Exposed an Inadequate Approach to Burnout: Moving Beyond Self-Care. In Shared Trauma, Shared Resilience During a Pandemic (pp. 259-268). Springer, Cham.
[98] Dall'Ora, C., & Saville, C. (2021). Burnout in Nursing: what have we learnt and what is still unknown. Nursing Times, 43-44.
[99] EXPERT PANEL ON EFFECTIVE WAYS OF INVESTING IN HEALTH (EXPH) (2021) Opinion on Supporting mental health of health workforce and other essential workers. Health and Food Safety Directorate-General,
Luxembourg: Publications Office of the European Union,
[100] Buchan, J., Williams, G. A., & Zapata, T. (2021). Governing health workforce responses during COVID-19. *Eurohealth*, *27*(1), 41-48.
[101] OECD/European Union (2020), Health at a Glance: Europe 2020: State of Health in the EU Cycle. Page218, OECD Publishing, Paris. https://doi.org/10.1787/82129230-en.
[102] OECD (2021), Health at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en
[103] Colombo F (2021) Investing in nurses and other Health Workers is an Investment in health system resilience. Presentation to ICN Congress, November 2021.
[104] OECD (2021), Health at a Glance 2021: OECD Indicators, p222, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en
[105] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020, page 47
[106] OECD (2021), Nursing graduates (indicator). doi: 10.1787/c54611e3-en
[107] SOWN, page 43
[108] Adebayo, O., Labiran, A., Emerenini, C. F., & Omoruyi, L. (2016). Health workforce for 2016–2030: Will Nigeria have enough. Inter J Inn Heal Res, 4(1), 9-16.
[109] World Bank Group, with ECSACON/ICN / JHPIEGO (2021) ECSA Eastern, Central and Southern African Region. Education and Labor Markets for Nurses. Challenges and Opportunities. July 2020. https://www.icn.ch/sites/default/files/inline-files/WBG_ECSA%5B12%5D.pdf

[110] World Bank Group, with ECSACON/ICN / JHPIEGO (2021) ECSA Eastern, Central and Southern African Region. Education and Labor Markets for Nurses. Challenges and Opportunities July 2020. P26 https://www.icn.ch/sites/default/files/inline-files/WBG_ECSA%5B12%5D.pdf p 24
[111] World Bank Group, with ECSACON/ICN / JHPIEGO (2021) ECSA Eastern, Central and Southern African Region. Education and Labor Markets for Nurses. Challenges and Opportunities July 2020. P52 https://www.icn.ch/sites/default/files/inline-files/WBG_ECSA%5B12%5D.pdf
[112] World Bank Group, with ECSACON/ICN / JHPIEGO (2021) ECSA Eastern, Central and Southern African Region. Education and Labor Markets for Nurses. Challenges and Opportunities July 2020. P52 https://www.icn.ch/sites/default/files/inline-files/WBG_ECSA%5B12%5D.pdf
[113] World Health Organisation (2021) Impact of COVID-19 on human resources for health and policy response: the case of Plurinational State of Bolivia, Chile, Colombia, Ecuador and Peru. Overview of findings from five Latin American countries, page viii. Geneva: WHO [Impacto de la COVID-19 en los recursos humanos para la salud y respuesta de política: el caso del Estado Plurinacional de Bolivia, Chile, Colombia, Ecuador y el Perú. Síntesis de hallazgos en cinco países de América Latina]
[114] Assaye, A. M., Wiechula, R., Schultz, T. J., & Feo, R. (2021). Impact of nurse staffing on patient and nurse workforce outcomes in acute care settings in low-and middle-income countries: a systematic review. JBI evidence synthesis, 19(4), 751-793.
[115] Statistics Canada. Table 14-10-0356-01 Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality
[116] Ray C (2021) Help wanted: Nova Scotia has more than 2,100 health-care vacancies. CBC News, October 13. https://www.cbc.ca/news/canada/nova-scotia/nova-scotia-health-care-vacancies-retention-recruitement-1.6208399
[117] Aldrich J (2021) Manitoba to bolster nursing complement with students in final year of study. Winnipeg Sun, November 15. https://winnipegsun.com/news/news-news/manitoba-to-bolster-nursing-complement-with-students-in-final-year-of-study
[118] NHS Digital (2021) NHS Vacancy Statistics England April 2015 – September 2021 Experimental Statistics. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-vacancies-survey/april-2015---september-2021-experimental-statistics
[119] https://www.health.org.uk/news-and-comment/news/almost-17bn-needed-to-clear-backlog-and-treat-expected-rise-in-patients
[120] Berichte: Blickpunkt Arbeitsmarkt / Mai 2020: Arbeitsmarktsituation im Pflegebereich (Reports: Spotlight on the labour market / May 2020: Labour market situation in the care sector) pages 14, 16. https://statistik.arbeitsagentur.de/Statischer-Content/Arbeitsmarktberichte/Berufe/generische-Publikationen/Altenpflege.pdf
[121] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (2021) Sustainable recruitment of nurses (Triple Win). GIZ, Germany.January. https://www.giz.de/en/worldwide/41533.html
[122] Wenger S (2021) Covid-19 to bring nursing staff more than applause. https://www.swisscommunity.org/en/news-media/swiss-review/article/covid-19-to-bring-nursing-staff-more-than-applause 8 August
[123] Romy K (2021) Swiss voters to decide on how to solve the nursing crisis. Swissinfo, October 28th. https://www.swissinfo.ch/eng/business/swiss-voters-to-decide-how-to-solve-the-nursing-crisis/47024988
[124] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Registered Nurses,
at https://www.bls.gov/ooh/healthcare/registered-nurses.htm
[125] Smyth J, Asgari N, Burn-Murdoch J (2021) 'Totally exhausted': latest Covid wave pushes US nurses to brink" Financial Times, 28th September.

[126]Hurt A (2021) Nurses 'At the Breaking Point,' Consider Quitting Due to COVID Issues: Survey. Medscape, October 8th.
[127] Spetz J et al (2021) The Impact of the COVID-19 Pandemic on California's Registered Nurse Workforce: Preliminary Data. UCSF Health Workforce Research Center on Long-Term Care, USA. https://healthworkforce.ucsf.edu/publication/impact-covid-19-pandemic-ca-registered-nurse-workforce-preliminary-data
[128] OECD (2019), Recent Trends in International Migration of Doctors, Nurses and Medical Students, OECD Publishing, Paris, https://doi.org/10.1787/5571ef48-en
[129] Socha-Dietrich K, Dumont J (2021) International migration and movement of nursing personnel to and within OECD countries – 2000 to 2018: Developments in countries of destination and impact on countries of origin. OECD Health Working Paper No. 125, OECD, Paris
[130] OECD (2020) Contribution of migrant doctors and nurses to tackling COVID-19-19 crisis in OECD countries, OECD, Paris, page 3. https://read.oecd-ilibrary.org/view/?ref=132_132856-kmg6jh3kvd&title=Contribution-of-migrant-doctors-and-nurses-to-tackling-COVID-19-19-crisis-in-OECD-countries
[131] Socha-Dietrich K, Dumont J (2021) International migration and movement of nursing personnel to and within OECD countries – 2000 to 2018: Developments in countries of destination and impact on countries of origin. OECD Health Working Paper No. 125, OECD, Paris
[132] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020, page XIX
[133] OECD (2020) COVID-19 and key workers: What role do migrants play in your region? https://www.oecd-ilibrary.org/social-issues-migration-health/covid-19-and-key-workers-what-role-do-migrants-play-in-your-region_42847cb9-en
[134] LeGrand C (2021)Plan to bring thousands of nurses and doctors into 'Fortress Australia' Sydney Morning Herald October 9. https://www.smh.com.au/national/plan-to-bring-thousands-of-nurses-and-doctors-into-fortress-australia-20211008-p58yf0.html
[135] Ely J (2021) UK-based Australian nurses offered £4,200 relocation costs to tempt them home. Nursing Standard August 20 https://rcni.com/nursing-standard/newsroom/news/uk-based-australian-nurses-offered-ps4200-relocation-costs-to-tempt-them-home-177556
[136] Visontay E (2021) NSW hospitals resort to flying nurses in from overseas as staff are begged to take extra shifts amid Covid crisis. The Guardian online, 31 December. https://www.theguardian.com/australia-news/2022/jan/01/nsw-hospitals-resort-to-flying-nurses-in-from-overseas-as-staff-are-begged-to-take-extra-shifts-amid-covid-crisis
[137] Turner L (2021) Forced to sit out during pandemic, nurse calls for changes to Ontario's registration process. CBC News, September 27. https://www.cbc.ca/news/canada/thunder-bay/christy-tashjian-waiting-to-work-1.6189165
[138] Ross S (2021) Facing shortage, Quebec to headhunt health staff in France, Brazil, Lebanon, elsewhere. CTV News, October 12. https://montreal.ctvnews.ca/facing-shortage-quebec-to-headhunt-health-staff-in-france-brazil-lebanon-elsewhere-1.5620510
[139] https://www.nhsemployers.org/publications/international-recruitment-toolkit
[140] https://www.england.nhs.uk/nursingmidwifery/international-recruitment/
[141] Collins A (2021) NHS leaders told to accelerate international recruitment as 800 nurses join register in a week. Health Service Journal, 16 December
[142] Buchan J (2021) The long-term reliance on international nurses is on the increase. Nursing Times, 21 December. https://www.nursingtimes.net/opinion/the-long-term-reliance-on-international-nurses-is-on-the-increase-21-12-2021/

[143] UK Government Press Release (2022) Government takes action to mitigate workforce disruption.2nd January.
https://www.gov.uk/government/news/government-takes-action-to-mitigate-workforce-disruption
[144] Nursing and Midwifery Council, UK (2021) Permanent register data tables.
https://www.nmc.org.uk/about-us/reports-and-accounts/registration-statistics/
[145] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) (2021) Sustainable recruitment of nurses (Triple Win). GIZ, Germany.January. https://www.giz.de/en/worldwide/41533.html
[146] Uutiset (2021) FM Saarikko: Finland needs to accept more foreign workers, 15 July
https://yle.fi/uutiset/osasto/news/fm_saarikko_finland_needs_to_accept_more_foreign_workers/12021081
[147] Scottish Government (2021) Ministerial Statement on Winter Planning for Health and Social Care Tuesday 5 October 2021. https://www.gov.scot/publications/ministerial-statement-winter-planning-health-social-care-tuesday-5-october-2021/
[148] OECD (2019), Recent Trends in International Migration of Doctors, Nurses and Medical Students, OECD Publishing, Paris, https://doi.org/10.1787/5571ef48-en
[149] OECD (2020) Contribution of migrant doctors and nurses to tackling COVID-19-19 crisis in OECD countries, OECD, Paris, page 9. https://read.oecd-ilibrary.org/view/?ref=132_132856-kmg6jh3kvd&title=Contribution-of-migrant-doctors-and-nurses-to-tackling-COVID-19-19-crisis-in-OECD-countries
[150] World Bank Group, with ECSACON/ICN / JHPIEGO (2021) ECSA Eastern, Central and Southern African Region. Education and Labor Markets for Nurses. Challenges and Opportunities July 2020.
[151] World Bank Group, with ECSACON/ICN / JHPIEGO (2021) ECSA Eastern, Central and Southern African Region. Education and Labor Markets for Nurses. Challenges and Opportunities July 2020. P52 https://www.icn.ch/sites/default/files/inline-files/WBG_ECSA%5B12%5D.pdf p 24
[152] WHO, Africa Region (2021) Rapid Policy Brief Number: 011-03 - COVID-19 response capacity with the health system: Health workforce recruitment and retention. Brazzaville: WHO Regional Office for Africa.
[153] https://www.poea.gov.ph/
[154]Batalova J (2020) Spotlight: Immigrant Health-Care Workers in the United States. Migration Policy Institute, USA. May 14th. https://www.migrationpolicy.org/article/immigrant-health-care-workers-united-states
[155] Socha-Dietrich K, Dumont J (2021) International migration and movement of nursing personnel to and within OECD countries – 2000 to 2018: Developments in countries of destination and impact on countries of origin. OECD Health Working Paper No. 125, OECD, Paris
[156] Little L, Buchan J (2007) Nurse Self Sufficiency/Sustainability in the Global Context. ICNM, Philadelphia, USA
https://www.intlnursemigration.org/wp-content/uploads/2019/08/Nursing-Self-SufficiencySustainability-in-the-Global-Context.pdf
[157] ICN (2019) International career mobility and ethical nurse recruitment: Position statement. ICN, Geneva. https://www.icn.ch/system/files/documents/2019-11/PS_C_International%20career%20mobility%20and%20ethical%20nurse%20recruitment_En.pdf
[158] ICN (2020) ICN statement to the World Health Assembly. SEVENTY-THIRD WORLD HEALTH ASSEMBLY Provisional agenda item 12 WHO Global Code of Practice on the International Recruitment of Health Personnel November 2020 https://www.icn.ch/sites/default/files/inline-files/WHA73%20ICN%20statement%2012%20_Final.pdf

[159] Socha-Dietrich K, Dumont J (2021) International migration and movement of nursing personnel to and within OECD countries – 2000 to 2018: Developments in countries of destination and impact on countries of origin. OECD Health Working Paper No. 125, OECD, Paris
[160] OECD (2021) OECDStat. Migration.
https://stats.oecd.org/viewhtml.aspx?datasetcode=HEALTH_WFMI&lang=en
[161] SOWN country reports
[162] Al-Riyami, M., Fischer, I., & Lopez, V. (2015). Nurses' perceptions of the challenges related to the Omanization policy. International nursing review, 62(4), 462-469.
[163] Nasrallah et al (2021) UAE Projects of the 50: New schemes announced in Abu Dhabi, plan to get 75,000 Emiratis into private sector. Gulf News, September 12.
https://gulfnews.com/uae/government/uae-projects-of-the-50-new-schemes-announced-in-abu-dhabi-plan-to-get-75000-emiratis-into-private-sector-1.1631418816885
[164] WHO (2016) Global strategy on human resources for health: workforce 2030. WHO, Geneva, page 23. https://www.who.int/hrh/resources/pub_globstrathrh-2030/en/
[165] WHO (2020) Managing health workforce migration - The Global Code of Practice. WHO, Geneva. https://www.who.int/hrh/migration/code/practice/en/ (Accessed 18 May, 2020)
[166] WHO (2020) .WHO Global Code of Practice on the International Recruitment of Health Personnel. Report of the WHO Expert Advisory Group on the Relevance and Effectiveness of the WHO Global Code of Practice on the International Recruitment of Health Personnel. WHO, Geneva. https://apps.who.int/gb/ebwha/pdf_files/WHA73/A73_9-en.pdf (accessed May 18 2020)
[167] WHO (2021) Health Workforce Support and Safeguards List, 2020.
https://cdn.who.int/media/docs/default-source/health-workforce/hwf-support-and-safeguards-list8jan.pdf?sfvrsn=1a16bc6f_10
[168] Omaswa F (2020) Covid-19 19-Exposes a global scramble for health workers. African Centre for Global Health and Social Transformation (ACHEST), Kampala, Africa. May 11 th (https://www.achest.org/index.php?option=com_zoo&task=item&item_id=279&Itemid=481 (accessed May 27th 2020)
[169] Jones, C. B., & Gates, M. (2007). The costs and benefits of nurse turnover: A business case for nurse retention. The Online Journal of Issues in Nursing, 12(3).
[170] Duffield C, et al (2014) A comparative review of nurse turnover rates and costs across countries. Journal of Advanced Nursing .vol:70 iss:12 pg:2703 -2712
[171] Kiel, J. M. (2020). An analysis of restructuring orientation to enhance nurse retention. *The health care manager*, *39*(4), 162-167.
[172] Zhao, Y., Russell, D. J., Guthridge, S., Ramjan, M., Jones, M. P., Humphreys, J. S., & Wakerman, J. (2019). Costs and effects of higher turnover of nurses and Aboriginal health practitioners and higher use of short-term nurses in remote Australian primary care services: an observational cohort study. BMJ open, 9(2), e023906.
[173] Shaffer, F. A., & Curtin, L. (2020). Nurse turnover: Understand it, reduce it. *My American Nurse*, *15*(8), 57-59.
[174] Muir, K. J., Wanchek, T. N., Lobo, J. M., & Keim-Malpass, J. (2021). Evaluating the Costs of Nurse Burnout-Attributed Turnover: A Markov Modeling Approach. Journal of Patient Safety.
[175] Buchan, J., Shaffer, F. A., & Catton, H. (2018). Policy brief: Nurse retention. Geneva: ICN, ICNM, CGFNS.
https://www.icn.ch/sites/default/files/inline-files/2018_ICNM%20Nurse%20retention.pdf
[176] Chamanga, E., Dyson, J., Loke, J., & McKeown, E. (2020). Factors influencing the recruitment and retention of registered nurses in adult community nursing services: an integrative literature review. *Primary Health Care Research & Development*, *21*

[177] Marufu, T. C., Collins, A., Vargas, L., Gillespie, L., & Almghairbi, D. (2021). Factors influencing retention among hospital nurses: systematic review. *British Journal of Nursing*, *30*(5), 302-308.
[178] Adams, R., Ryan, T., & Wood, E. (2021). Understanding the factors that affect retention within the mental health nursing workforce: a systematic review and thematic synthesis. *International Journal of Mental Health Nursing*
[179] MacKay, S. C., Smith, A., Kyle, R. G., & Beattie, M. (2021). What influences nurses' decisions to work in rural and remote settings? A systematic review and meta-synthesis of qualitative research. *Rural and Remote Health*, *21*(1),
[180] Dall'Ora, C., & Saville, C. (2021). Burnout in Nursing: what have we learnt and what is still unknown. Nursing Times, 43-44.
[181] Cohen-Serrins, J. (2021). How COVID-19 Exposed an Inadequate Approach to Burnout: Moving Beyond Self-Care. In Shared Trauma, Shared Resilience During a Pandemic (pp. 259-268). Springer, Cham.
[182] Putra, A. P., Kusnanto, K., & Yuwono, S. R. (2020). Effects of Job Satisfaction and Organizational Commitment on Nurse Retention: A Systematic Review. *Indonesian Nursing Journal of Education and Clinic (INJEC)*, *5*(2), 197-205.
[183] Yun, M. R., & Yu, B. (2021). Strategies for reducing hospital nurse turnover in South Korea: Nurses' perceptions and suggestions. *Journal of Nursing Management*.
[184] Al Zamel, L. G., Lim Abdullah, K., Chan, C. M., & Piaw, C. Y. (2020). Factors influencing nurses' intention to leave and intention to stay: An integrative review. *Home Health Care Management & Practice*, *32*(4), 218-228
[185] Washeya, F. N., & Fürst, L. N. (2021). Work Features that Influence the Retention of Professional Nurses in the Public Health Sector in Windhoek, Namibia. *Africa Journal of Nursing and Midwifery*, *23*(1), 17-pages.
[186] Dall'Ora, C., & Saville, C. (2021). Burnout in Nursing: what have we learnt and what is still unknown. Nursing Times, 43-44.
[187] WHO (2016) Global strategy on human resources for health: workforce 2030. WHO, Geneva, page 23. https://www.who.int/hrh/resources/pub_globstrathrh-2030/en/
[188] WHO (2020) Managing health workforce migration - The Global Code of Practice. WHO, Geneva. https://www.who.int/hrh/migration/code/practice/en/
[189] WHO (2016) Global strategy on human resources for health: workforce 2030. WHO Geneva. https://apps.who.int/iris/bitstream/handle/10665/250368/9789241511131-eng.pdf
[190]WHO (2016) Working for health and growth: investing in the health workforce. Report of the High-Level Commission on Health Employment and Economic Growth. Geneva. https://apps.who.int/iris/bitstream/handle/10665/250047/9789241511308-eng.pdf?sequence=1
[191] WHO (2020) Managing health workforce migration - The Global Code of Practice. WHO, Geneva. https://www.who.int/hrh/migration/code/practice/en/ (Accessed 18 May, 2020)
[192]WHO (2016) Working for health and growth: investing in the health workforce. Report of the High-Level Commission on Health Employment and Economic Growth. Geneva. https://apps.who.int/iris/bitstream/handle/10665/250047/9789241511308-eng.pdf?sequence=1
[193] DalPoz M, Gupta N, Quain E, Soucat A (2009) Handbook on Monitoring and Evaluation of Human Resources for Health. WHO/World Bank/ USAID.
[194] Chisholm, M., Russell, D., & Humphreys, J. (2011). Measuring rural allied health workforce turnover and retention: what are the patterns, determinants and costs?. Australian Journal of Rural Health, 19(2), 81-88.
[195] Lopes, S. C., Guerra-Arias, M., Buchan, J., Pozo-Martin, F., & Nove, A. (2017). A rapid review of the rate of attrition from the health workforce. *Human resources for health*, *15*(1), 21.

[196] Chankova S, Muchiri S and Kombe G Health workforce attrition in the public sector in Kenya: a look at the reasons Human Resources for Health 2009, 7:58
[197] Dovlo D: Wastage in the health workforce: some perspectives from African countries. Human Resources for Health 2005, 3:
[198] Russell, D. J., Humphreys, J. S., McGrail, M. R., Cameron, W. I., & Williams, P. J. (2013). The value of survival analyses for evidence-based rural medical workforce planning. Human resources for health, 11(1), 65.
[199] Buchan J (2010). The benefits of health workforce stability. Human Resources for Health, 8:29.
[200] Chaudhury N, Hammer J, Kremer M, Muralidharan K, Roger FH. (2006) Missing in action: teacher and health worker absence in developing countries. Journal of Economic Perspective 20(1):91-116.
[201] Goldstein, M., Zivin, J. G., Habyarimana, J., Pop-Eleches, C., & Thirumurthy, H. (2013). The effect of absenteeism and clinic protocol on health outcomes: The case of mother-to-child transmission of HIV in Kenya. American economic journal. Applied economics, *5*(2), 58.
[202] Chisholm, M., Russell, D., & Humphreys, J. (2011). Measuring rural allied health workforce turnover and retention: what are the patterns, determinants and costs?. Australian Journal of Rural Health, 19(2), 81-88.
[203] Russell, D. J., Humphreys, J. S., & Wakerman, J. (2012). How best to measure health workforce turnover and retention: five key metrics. *Australian Health Review*, *36*(3), 290-295.
[204] Lopes, S. C., Guerra-Arias, M., Buchan, J., Pozo-Martin, F., & Nove, A. (2017). A rapid review of the rate of attrition from the health workforce. *Human resources for health*, *15*(1), 21.
[205]WHO (2015) National health workforce accounts:The knowledge-base for health workforce development towards Universal Health Coverage.
http://www.who.int/hrh/documents/15376_WHOBrief_NHWFA_0605.pdf
[206]WHO (2015) Human Resources for Health Information System. Minimum Data Set for Health Workforce Registry http://www.who.int/hrh/statistics/minimun_data_set.pdf?ua=1
[207] State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020
[208] Buchan J et al (2020) Ageing Well? Policies to support older nurses at work. ICNM, Philadelphia, USA. https://www.icn.ch/sites/default/files/inline-files/Ageing%20ICNM%20Report%20December%209%202020.pdf

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