**Reimagining Medical and Nursing Education**

**Transcript Begins:**

**Dr. Gagandeep Kang:** …Multiple continents and has most recently has been dealing with Covid-19, as have many of us, particularly related to virus watch, which is a major population study of Covid 19 transmission. Dr Devi Shetty, who will be moderating the session, is a cardiac surgeon and is well known in India, for his ability to speak out and speak up, particularly on reforms in the health care sector. He has worked with the Government of India, state governments, trade bodies and global policy think-tanks, to develop policies for healthcare in India. He's a strong proponent of technology for efficient healthcare delivery and he is also one of the commissioners for the Lancet commission. We also have Dr. Leila Caleb Varkey, who is a commissioner as well. She started her career as a public health nurse, completed her doctorate in public health and then joined the population council as a fellow. She is currently Senior Advisor Reproductive health at the Centre for Catalyzing Change- C3 India. She was a member of the planning commission's high level expert group on Universal Health Coverage from 2009 to 2011, and she's been a member of several committees and task forces that are related to nursing education, to the Lakshya initiative, and the Midwifery initiative. Dr. Bhabatosh Biswas specializes in cardiothoracic and vascular surgery and is with the National Institute for Pharmaceutical Education and Research. He's the former Vice Chancellor of the West Bengal University of Health Sciences, Kolkata, and former Vice President of the National Board of Examinations in New Delhi. He is currently on the national task force established by the Supreme Court along with Dr. Shetty, to look into various aspects of the management of the pandemic. It's my privilege to welcome all of you and to invite Prof. Wanicha to get the first talk.

**Prof. Wanicha Chuenkongkaew:** Good afternoon, Namaste, Professor Johnson, Professor Gagandeep, Dr Devi and all colleagues here. I am very honoured to be part of this important webinar organized by the Lancet Citizens Commission of India.

So, first of all, I would like to disclose, I have no conflict of interest. I will start with the health profile of Thailand. You know Thailand is very close to India. The population right now is 69 million since 2019, ours is an upper middle income country, and also our population coverage of UHC since 2002 is almost 100 percent, and life expectancy is 77 years old. Our investment in the health budget is approximately 17 percent of the total budget, and doctor population ratio is about 1:1300 , Nurse Population is 1:420, and we have about one million village health volunteers. There are one hundred provincial hospitals and almost one thousand rural district hospitals, and also 10,000 rural health centres. I will cover with three aspects- medical and nursing education in Thailand, and health professional education in Thailand, and also Medical and Nursing education during the pandemic era. For the first topic, I would like to show you that medical education in Thailand during the period of 1920, health system changed as modernization of medicine happened, and also medical education changed to scientific based medical education. During 1960 to 1990 we had the external brain drain, and that's why we had to develop rural health and medical education in Thailand, we shifted to compulsory public service and re-oriented medical education. In 1995 the internal brain drain to private hospitals in our country, and also economic boom and growth of private sectors in our country, so we had to achieve our production of doctors and also health professionals, nurses, pharmacists dentists with the special rule of doctor production, and rural recruitment and local training and then back to their hometown. In 2002, the Universal Health Coverage in Thailand, the cover of almost a hundred percent, so we needed family doctor production and also we needed community engaged health professional education. Go back to 1960, as I already mentioned that we had external brain drain to mostly to United States. And because there was high demand from United States, and also Vietnamese war, communist insurgency, so that at the time we started with three year compulsory contract doctor for public service after they graduated from the University. If they could not do this, they had to be fined almost 13000 US Dollars. Since that time, we have had to get the reoriented medical education, the commitment of medical school, since we have the annual medical education conference I think at that time maybe around 1986, to produce medical doctors for the rural areas with four characters- a good clinician, a primary health care supporter, a teacher and also a manager. So curriculum reform and more engagement of community and provincial hospitals in the medical education, and exposure to the integrated health services system in the provincial and rural community hospitals, including invitation of rural doctors to teach in the medical school, and we started with the special project we call MESRAP, which stands for Medical Education for Students in Rural Area Project. It started in the biggest university, the biggest medical school in Thailand.

Current medical education in Thailand, now we have three tracks of medical student recruitment. The first is the original national competition track. In this, you have to pass the national entrance examination. This is for the best brains. And the second is the provincial competition track. We call it CPIRD, Collaborative Project to Increase Production of Rural Doctors, which require provincial residency and provincial training. These two tracks are subject to the same three years compulsory public works or 13500 USD fine. A study in 2010, about 20 years ago after the start of CPIRD found that the medical graduates from CPIRD programs stay a few years longer, on the average. I mean, average is about three years, so this maybe three or four more years, than those from the national competition track, which is the first track. The last one is the district competition track, as One District One Doctor program or we called ODOD. This ODOD program requires rural district, residence provincial training and hometown placement, the same as the second track. But they get the special tutoring system and living allowance is also given to them during their education period. These ODOD graduates will have to work for the government for 12 years, or face a 70000 USD fine. Graduates from all tracks as well as foreign medical graduates are required to go through a national licensing examination to get their practice license. So these are the current 3 tracks. But right now I think ODOD, we have just a few students from this third track. This is the outcome of CPIRD for distribution of doctors. You can see, from the year 2000, almost 15 year years later, you can see the distribution getting better. So in summary, for medical education in Thailand since 1995, from internal brain drain, the secret is the cooperative project to increase production of rural doctors, that produces more doctors who work in the rural areas. There are 23 universities or medical schools in Thailand, and 45 medical education centres, covering 12 health care regions in Thailand. Medical education is workplace bases mostly in the community hospitals in Thailand. And for this track, I mean, for CPIRD, it produces about 1500 doctors, so about a half between the national track and also the CPIRD track. And eighty percent of graduates work in a community hospital with a three-year bond with other motivation and also incentives. I will inform you later on, but this is because of the weakness of using service-based hospital for teaching. So we move from provincial hospital or university hospital to community hospital, but this is only a half of the medical students who go to this track. And also since 2002, Universal Health Coverage that covers the whole of the population in Thailand, so that's the reason for the increasing of demand of primary health care in public sector. So we just start with the networking of rural health personnel. We call this District Health System Academy. This means one medical school or one university in one district health system in 12 healthcare region, and also we require the family doctor production in the new Thai constitution, we are lucky that they have already embedded this movement in the our new constitution. So we got the reform, the annual inter-professional education reform. This means not only physicians, not only nurses, not only pharmacists, they are together joined for the kind of this reform. And it is not new for Junior Sanitarians.

These Junior Sanitarians spend six months on integrated clerkship in the rural hospital and also technical nurses, midwife students for three months. This is the additional health workforce to support the healthcare system in the rural area. Apart from medical education, I will mention on nursing education in Thailand. For nursing education in Thailand, I will touch briefly, because I am not familiar with this kind of education, but I work with them, so I will briefly inform you. For nursing education in Thailand, it has evolved along with the medicine from its early beginning in the late 1800s era, so it came along with the medical education reform. The first nursing school opened in 1896, and in 1950 the Ministry of Public Health instilled a nursing division that at first, they were not nursing school but only a nursing division, but right now the nursing education is still there, almost 90 percent of nursing education is still there in Thailand.

To ensure quality of nursing practice, licensing laws were instilled in 1997, and in 1998 the first national examination for nurse graduates was administered by the Thai nursing council, and this must be rewritten every five years until now. This is to maintain quality of nursing education institutions and institutions also have to be accredited, and reviewed every 1-5 years by the Thailand nursing council as well. For our health professional education system in Thailand, briefly, we have 23 medical school, 2 are private medical schools, and 45 programs for the collaborative project to increase production of rural doctors CPIRD, produces about 3000 new doctors a year. And for nursing school, almost 90 right now and also 24, about one quarter, are private nursing schools. They graduate about almost 10000 nurses per year. In 2020 Thailand had around 60000 medical doctors, but I think only half are still active, and also almost 200000 nurses and also 34700 pharmacists, 13000 dentists and also 15,341 medical technologists and also almost 10000 physical therapists. Master and doctoral degree as specialist training certified are available. It's different for nursing school, it is available for a long time.

And I will move on to second topic, health professional education in Thailand. Since Flexner’s report in 1910, the reform has been shifted to scientific based education which equipped a physician with the knowledge that contributed to the doubling of life span in the 20th century and also for the elderly era as well. Since then the global commission report, in Thailand we follow the global commission and also we move on transformative education. We start with the resolution in SEARO, South East Asian Regional Office, and also in Thailand, and that at the time we reform our education, we run together more and more among health professions, as inter-professional education. and you can see this, as I have already mentioned, the DHSA stands for District Health System Academy, which is an integrated network among personnel in district hospitals, academic institutes, families and people with local government contribution to improve population health and quality of life. To equip learners to understand and practice locally, community engaged health professional education programs have been developed to enhance workforce and for people-centred primary health care, the community engaged means community academy sustainable partnership with equal voice. It belongs to, by and for the best community. So this education strategy aims at encouraging a qualified workforce who has high potential of social return as priority for increasing rule of retention rate of graduates. It also promoted integration between health systems and academic institutes to enhance competency-based authentic and inter-professional being. So this launched in Thailand. And also, Thailand is a middle-income country, has a universal public fund free at point of access service. But there is a lack of health workers and particularly doctors in the system. Care has been free since 2002 which has made a big impact. About 95 percent of the population are covered and almost 100 percent right now. Thailand has progressive interprofessional education programs where the health professionals work together to transform service delivery.

For the measures for rural distribution of doctors, we have three elements. For education, the increased production based on the rural recruitment role called training and then hometown placement, rural re-forecast curriculum, compulsory public work, or else they can be fined. Conditions for specialty training, they have some conditions such as they have to work in the rural area for almost five years and they can go through the UHC for their special training. For social motivation we have the social movements for dedicated social spirit. Annual based rural doctors award and rural doctor society and journal. That is to motivate that work in the rural area, and both financial and non-financial incentive for their career and professional development, and also management provision of good health facilities and environment, supporting staff, house, food and utility, re-allocation of budget, so they can get the allowances, more and more. For health system in Thailand, the health service system cover total preparation as I already said, and the service covered by village health volunteers. They are volunteered to work in the in the community at all villages, more than 10000 villages. Health promotion hospitals at our sub district, community hospitals and district health officers at all districts.

General hospitals and provincial health offices at all provinces and regional medical centres as well as university medical centres offering primary secondary and tertiary care as well as public health service. In 1978, in response to the Alma Ata declaration, Thailand launched the Thailand primary healthcare scheme through the establishment of village health volunteers as the community’s bridge to the most peripheral health services. Basic minimal needs was the framework of equitable services. Previously they cannot get the allowance but right now they get some allowance for their work. In 1998, Thailand set up the Universal Health Coverage scheme with an aim of using public funds to provide equitable health care to all citizens not covered by health insurance or welfare. It gives capitation payment to care providers, both public and private, to cover medical needs. In essence it provides financial protection for treatment of illness which are considered real needs. And also based on health promotion act enacted since 2001 as public executive agency for Health promotion, they applied 2% excise tax on tobacco and alcohol. And this is for health promotion in Thailand. An independent board chaired by the Prime minister with civil society on board, they regulate this foundation, evidence-based social and policy movement for health promotion. So this kind of movement is for our primary health care. And also I would like to mention our Asia-pacific network for health professionals education reform and the five countries we include are India, Bangladesh, Vietnam, Thailand and China. The goal of the corporation is aiming at achieving successful reform of education in response to the healthcare system and social community need in each country.

We move on to collaborative research. We have some reports, some articles such as the article on attitude towards working in rural areas and self-assessment of competence in last year medical students. And for nursing students. So these are some results that I am going to show you, that reflect the positive attitude towards working in rural areas for last year medical student. In China, in India, we found about 50 percent, and Bangladesh and Thailand 60 percent, and Vietnam one-third with positive attitudes. So student’s positive attitude toward their school in terms of preparing or inspiring them to work in rural areas were low. So their confidence about overall competency was quite low. And this is their perspective. So medical schools need to put more effort in improving student attitudes towards working in rural areas. And also my talk has already been published in our first textbook of global public health. It's going to be released in the field in the next few months. So right now we move on to development on community engagement health professional education and training. Starting in the southern part of Thailand, the Prince of Songkla University, they moved on the program of medical education, the students have to study and engage in the community since the first year to the sixth year. We have a six year medical education program. So this is very important. After I was in the Mahidol University, I was temporarily the Vice President at the Praboromrajchanok Institute in the Ministry of Public Health. Praboromrajchanok was the father of prince Mahidol, and the great grandfather of our current king. In this institute we produce the highest number of annual nursing graduates in the world, about four thousand nurse graduates per year among thirty campuses across the country. So we are going to assess the community engaged health professional education framework in Thailand. This is some framework I would like to use to briefly show you, about the objective and for inappropriate learning and HWF maldistribution and also health needs. This requires the new approach of the health professional education, so we need the community engaged health professional education. so academic institute and community has to join and engage and collaborate on production of the students and…

**Dr. Devi Shetty:** Sorry for the interruption, but we have a lot of questions to ask you.

**Prof Wanicha:** Yeah, okay. I would like to close my talk with medical and nursing education in pandemic era. So for health professional education and training during Covid-19, the government gave the university autonomy to adjust an academic calendar and flexibility, and the university stopped and slowed according to the severity of the spread. So this kind of platform has been changed during the Covid 19 era. The teachers upgrading ICT skills, they have to protect themselves and also students, and also learner promoting behaviour that reduces virus spread, and access to necessary technology and support team, and these were the academic activity for undergrad and postgrad. I will leave you with this slide and will close my talk for the health professional education system reform. I would like to mention our second global health professional education conference which will be organized and held in November next year. Thank you so much.

**Dr. Devi Shetty:** Prof Wanicha, would you take some important questions from us? The first question is- your medical colleges and the nursing colleges, are they owned by the government or by the private sector? and what is the cost of how much students spend to get medical degree and nursing degree?

**Prof Wanicha:** For medical schools, from 23 medical school only two are private medical schools, for nursing about one quarter are private nursing schools. For the cost, this is a cost from the announcement, about 13500 USD, and for Nurses it is about 1/3rd.

**Dr Shetty:** Okay, the next question is- you graduate a few thousand doctors every year. How many of them get to become medical specialist?

**Prof Wanicha:** Right now, it is about 70 percen. But we will shift to 50 percent, we will produce family doctors more and more in the near future, because of our new constitution.

**Dr. Shetty:** And this higher medical education happens in the medical college itself? or it happens in any busy hospital like in NHS, and other systems of the west?

**Prof Wanicha:** You mean postgraduate? Yesin the medical schools, it happens in medical schools.

**Dr Shetty:** Roughly how much does it cost to establish a medical school in Thailand?

**Prof Wanicha:** How much does it cost to establish? Oh, it's a challenging question. It depends on the capacity of the medical school. If it is a big one, it costs a lot. I'm not quite sure. I will leave this question and I will send you a message later.

**Dr Shetty:** Each college, how many students graduate from the medical college and the nursing college every year?

**Prof Wanicha:** It varies, from 100 to 200 medical students, it varies, and nursing, as I have already told you, for nursing it is about 100 to 200 as well, except at my Institute, It’s about 4000 per batch each year.

**Dr Shetty:** One nursing college graduating 4000 students?

**Prof Wanicha:** No, for most of the nursing colleges they produce about 100 to 200 Nursing graduates, but for this new one they produce 4000 graduates per batch. Only except this one, because this belongs to the ministry of public health, but the others belong to the ministry of education.

**Dr. Shetty:** The nurses from Thailand are extremely skilled. How many hours in a day do these nursing students spend on the bedside, compared to how many hours they spend in the classroom?

**Prof Wanicha:** Oh, thank you for this question. I think, compared to medical students, maybe it varies from six to eight hours per day.

**Dr Shetty:** Six to eight hours they spend in the classroom or on the bedside?

**Prof Wanicha:** Per day for clinical practice, not including the lectures.

**Dr Shetty:** Why do you think your health care compared to most of the Asian countries, are far ahead of other Asian countries? The quality of care in Thailand?

**Prof Wanicha:** Yeah, I have the answer of this question. I think these two elements, we are promoting primary health care, this is the government policy, they promoted primary health care. And the second one, the health care service system covered total population by the village health volunteers.

**Dr Shetty:** You keep talking about rural doctors, our rural doctors. Is there two streams of education in your country for training doctors, is there a separate a stream for training rural doctors?

**Prof Wanicha:** For both tracks, the national track and for rural track, they both study for the first three years in the university for basic science, and for the other three clinical years, the national track they spend their clinical years at the university hospital or provincial hospital, but for the rural track they spend their clinical years at the community hospitals.

**Dr. Shetty:** Excellent. Are the nurses in Thailand allowed to prescribe some drugs like doctors?

**Prof Wanicha:** No, except for basic drugs that we normally use in-house, or that we can buy from the drugstore as well.

**Dr Shetty:** Okay, over the counter drugs are allowed, but they don't prescribe, nurses don't prescribe meds. And is there a stream for the nurses to become doctors if they wish to become doctors?

**Prof Wanicha:** Yes, of course, we have some special track.

**Dr Shetty:** What percentage of the nurse graduates take up this track to become doctors?

**Prof Wanicha:** Not that much. I don't have the percentage, but not that much.

**Dr Shetty:** Thank you so much, Wanicha. It's a very informative session, we are extremely grateful to you and I will try to have a copy of your presentation, and it will have a significant impact on how we want to plan our future of healthcare. Thank you so much, we learned so much. With permission from Gagandeep, can I move to the next speaker? I would like to request Professor Anne Johnson make her presentation first.

**Prof Anne Johnson:** Thank you very much Dr. Shetty. It's a great pleasure to be with you all today from London, and I send you many greetings. I've been asked to speak to you today about the role of research in medical education, and I’m going to draw on a piece of work we did in our Academy of Medical Sciences. I’m hoping that you can put up my slides on the screen.

That's lovely, thank you very much. So, I think you heard from Professor Kang at the beginning about the Academy of Medical Sciences, of which I'm President, and the Academy of Medical Sciences in the UK tries to bring together people who do health research, biomedical research and health research in the UK, and to think about how they can work within our National Health Service, and so the Academy brings together a lot of fellows who are involved in a huge range of disciplines, from very basic laboratory science through to my own area of research which is public health science. And we've been thinking about how research can help in education but also how we develop research careers. Now why does that matter? And that it matters to have some research capability in education simply because that allows us to deliver a better service with better outcomes, and I’ll turn to that in a minute. Let me tell you a little bit first about the National Health Service in the UK. We are in a very privileged position that since the 1940s, we in the UK have had access to health care free at the time of need, so you don't have to pay anything for your health care. And that goes right across primary and community care through to secondary care in hospital, and through to very specialist care in specialist tertiary care centres, and we also have a National Public Health System which is concerned with, for example ,aspects like epidemic outbreaks, but also other aspects of health and many of the social determinants of health alongside major issues like diet, alcohol and smoking. And so we have a number of medical schools across the country and universities who train our healthcare workforce- doctors, nurses, clinical psychologists and a whole range of other disciplines as well, and the Academy is concerned that as we develop our National Health Service, that the service we build and the care we provide to patients and the prevention we provide for them should be based on good research evidence, and indeed everybody in medicine and healthcare needs to practice what we call evidence-based practice. But that means that to be able to have an evidence base we need a bunch of people who are working in research, and almost everybody in the healthcare setting needs to understand the nature of research and evidence. So we would like to see this therefore as a very core part of education.

You can move on to the next slide. So we have an international reputation in the UK for biomedical and health research, and quite simply, there is research on research, and that tells us that in research to active health care settings, you get better patient outcomes, both for people who might be involved in the research patients are involved in research but generally it creates an atmosphere in those environments that tends to produce better patient outcomes. So that's a very good reason to do research in the first place, and also investing in research gives you a return on your investment either through sometimes because you can take up new and better treatments, but also sometimes because you can learn about the things that we are doing that are not affected. And we in the UK have an NHS, and we have many universities that are multidisciplinary, and those universities teach undergraduates, teach postgraduates, but also have a very large research function. In my own university, at UCL, about 60 percent of the university is in health and biomedicine, and many of the people who teach are also researchers and similarly many of our doctors who are practicing within our National Health Service are also teaching medical students and other students. But if we're going to move forward and have more research and better research to inform patient care, then we need to strengthen the interface between the University and the National Health Service, and indeed the public. And when I talk about research I think people often think that would be very esoteric laboratory research. But I’m talking about anything from very basic research to clinical research, the sort of clinical trials we've become so familiar with in the Covid pandemic, for example, for vaccines and treatments, and it can be studies of new technologies, studies of diagnostics, studies using data and epidemiology like the ones I do, and studies which involve communities, and I know that at UCL will be very involved with colleagues in India, studying for example, the impact of working in women's groups to improve pregnancy outcomes. So research can have a very big basis, a lot of it is in primary care and in public health and in nursing as well as in medicine itself.

So we put together a group of people to think about how we can drive research through our health system better in the coming years, and that report was produced by a group of experts, the link was on the last slide which I can let you have so you can see that link if you're interested in our report, and we've focused on six areas, creating a health system that values research because that produces better health outcomes, integrating research teams between universities and the health system, and that's important very much as well in general medical education, providing research time for people who are working in the health service, whether or not they're primarily professors and academics, or whether they're working primarily in clinical work, making sure that the undergraduate curriculum really gives health care staff the skills not necessarily to do research, but certainly to understand and to engage with research and not lead research, but certainly to bring patients into research because that's such an important way of progressing, giving people flexibility in their training pathways so that they can have time out to learn more about research and then also having the right kind of structures through what are called our research and development offices to help people to have all the right ethical procedures and the right governance to be able to do their research in a way that is robust and ethically appropriate for working patients. Could I have the next slide please?

So, in our own National Health Service, what we recommended and this is still a piece of work which is ongoing, we're trying to drive through these recommendations. We are seeing in our National Health Service a whole stage of reorganizing our health service actually to try and have closer links between the health service and our social care system and to plan again more for the health of populations, which is a subject very dear to my own heart, and very importantly we feel that it's very important that research should be the responsibility of every part of our National Health Service to value and promote research. And this may seem in countries where I know you're thinking very much about getting Universal Health Coverage and the balance between primary and secondary care, it may seem like a luxury, but actually we know that doing research results in better patient outcomes and it also leads to greater satisfaction among staff who are involved in really trying to understand how best to deliver health care. So we want to develop measures of research metrics of how much research we're doing and what impact it has, and also having a sort of oversight framework of a score card of how people are doing on the research front, and that those research metrics should all be about showing how research activity leads to better care and encourage further research not just in secondary care but in primary care and public health. And I was very struck by this talk we've just heard from Thailand about the incredible importance of primary care in a health care system, and being able to reach out to communities to intervene early and give people care at a primary health care level which is much more potentially cost effective and so on, than having to deliver all your care in secondary care, and be treating people late in disease. Could I have the next slide please?

So, what were the other things that we wanted to think about in creating a successful research environment for people who want to go into research or participate in research or learn about research as part of their education? And one of them is to try and link the universities and the health care system more closely. I mean, we've just heard about the importance of the medical schools in delivering medical education. They're often associated with the universities, but you've got the universities going on along in one channel and it may be the health care system in another channel. What we've been trying to do in the UK, is people have joined appointments between the health system and the universities so they do a combination of research and clinical practice at the same time and we try to create research careers, but equally we can think about how people who are in the health service may continue to have a relationship with their university as they go forward and have academic roles, either in teaching or research as they move forward. So those joint academic titles are very important. And we also want to create greater mobility across sectors, so people may train as doctors, trainers, nurses, but because they understand what research is about as part of their undergraduate training, they then might want to go and participate in research or change to a research career as they move forward. Next slide please.

The other thing that we felt was very important was, in addition to integrating research teams to try and give people dedicated research time, I know again, that this may seem a luxury in places where it's very difficult to get the health service, to provide health care and to have the resources for healthcare, but we know that this brings job satisfaction, again, I was very struck in the last talk about the issue of a brain drain, of people moving from one area to another, and one of the ways of retaining staff which we've found is that if people are involved in research and have close links with the universities, that makes for greater job satisfaction and indeed helps retain staff. We have great inequalities also in the UK, in health between richer and poorer regions of the UK, and in access to health services, and we're very engaged with an agenda on levelling up, trying to reduce health inequalities and try to get more homogeneity in the provision and quality of services and providing a research environment, and one which makes people really think about the evidence based on which they're doing their clinical practice, is very important. So we've been thinking about, can we, in the UK, do some pilot studies in a number of hospitals where we give senior doctors an opportunity to do more research as part of their job plan in research and also reinvesting income from research into research endeavours?

Could i have the next slide please? And the fourth area is how we rethink undergraduate training of health professionals. At UCL, all the medical students go through a six-year training program, and in the middle of that they do an interpolated BSc which often has a research component to it and they do short-term research projects, but also a lot of the teaching they get in a research-led university is by people who are involved in research. So having people understand where evidence comes from and how to interpret evidence really, is the basis of being able to use evidence in clinical practice, and to draw on the evidence from research to say on the basis of these clinical trials or these studies, we can say this is the best way that will produce the best outcomes for patients, and that's why we have a committee called NICE which looks at the evidence and then defines clinical practices practice on the basis of that evidence. So that is a very important area in undergraduate training, is that undergraduates should understand basic research methods.

Next slide please. For people who want to go into research we are trying to stimulate much more flexibility in post-graduate training so that people can step out and in of training and

build a much clearer research pathway. This is something I’ve often talked to colleagues in India and other parts of the world about, is that it can be very difficult if there isn't a system or a career pathway for clinicians and healthcare practitioners who want to go into research, and those are pathways that we have been building over the last 10 or 20 years in the UK, so that some of our, and it is a small fraction actually of the community who have research careers, but actually being able to build sustainable and stable research careers linking people between the health service and the university, so that you've got ongoing generation of research and evidence constantly refining and improving medical practice. And then, in this slide, we are trying to make sure that we get better, this is rather a local UK sort of phenomenon, but try making sure that our health service research and development offices work with our higher education research offices, so that we are absolutely integrating the governance in between the universities and the National Health Service. And then just, very briefly, the other area where I’ve been working, just to say a little bit a little bit more about the schemes that we have been mentoring. Do you have the next slide please?

One of the areas if you want to build a career in research, it can often be very challenging because relatively few people have a career in research, but they are so important to the integrity and future of our health systems and in teaching the next generation of clinical practitioners. So at the Academy of Medical Sciences we have a mentoring scheme which has been running for a number of years, where we try to find more senior colleagues to work with younger colleagues who are in training in clinical research, to try and help them carve a research pathway.

Next slide please. And I think many of you will be familiar, some of our more senior colleagues, when you start out in your career, you've got a plan that you'll be a professor by the time you're age 40 or something, and you set off on this nice path that you think will be quite straight and seamless, but in practice, life is never as straightforward as that, and there are many bumps in the road, and indeed there might be some troughs that you fall down, that could be, you lose all the cells in your assay in the laboratory, or it might be that your data gets corrupted, or nobody wants to participate in your trial. In my case, when I was studying the HIV epidemic, we were wanting to do some studies of sexual behaviour in the United Kingdom, but that wasn't deemed to be appropriate, so our research was banned from funding by the then Prime Minister. So that was a big hole in my career, but we climbed out the other side with some funding from the welcome trust at that time when we were studying the HIV epidemic earlier on. And I suppose that would look like that wire lift across a big chasm in my career. And so on and so forth, and then things happen in our families or we change direction or we move to different institutions and so it's never a straightforward path, and sometimes you need a guide along the way. And that's what we have in our mentoring scheme. Could I have the next slide please?

And we make a distinction, when we think about mentoring, is that very often when people think about mentoring they're really thinking about the relationship between, they're not really thinking about mentoring as we think about it, mentoring is sometimes, or rather our guidance sometimes comes from someone who's a senior boss, the senior professor in the department. But with mentors we're trying to look for people who actually are very often maybe in a different discipline, but who are not in any way line managing the person, the mentee, but they're providing them opportunities for self-development and providing them ways to have their own independence, and that is something I’ve done quite a lot of, and I’ve found it immensely rewarding to work with younger colleagues who are trying to find their path, and talking with them about ways that they can overcome obstacles. But the model here is one that, the mentee, and not the mentor is in the driving seat. And this is all about experience, and not hierarchy, so this is outside any structure of line management and I know very often people find it difficult to make that distinction.

So if you have the next slide please. So, there are two kinds of developmental learning that we can think about. One is coaching, and coaching and mentoring are slightly different things. So in coaching, and I have worked quite a lot with a management coach in my career, and they can be incredibly helpful thinking about skills and knowledge and behaviour and competencies and task performance, goal setting, and when you're working with a coach or a mentor, you need all these things in the middle of this Venn diagram. You need to trust them. You need to be able to ask them questions. You need to have respect for them. They need to support you, listen to you and reflect back to you very often as a mirror. And in a mentoring relationship, very often, a mentoring relationship will be a longer term work relationship, working with a younger colleague and building capability helping them find about where their strengths and weaknesses lies, and broadening their horizons. And certainly I’ve worked with many people where we've set some goals and thought- well, what is it you really want to do, what's the next step for you, figuring out and then working together with them. So we at the Academy have a mentoring program and we're very happy to share any of that with colleagues how we've done that, and where we have fellows in the Academy who provide mentorship for younger colleagues, very often who are recipients of our grant program and these are some of the roles that they have.

So I think I'm going to leave it there, and thank you for listening, and then ask if there any questions that you want to direct towards me. I am very aware I’ve given you a very UK perspective, but that was what I was asked to do, but it gives you an idea of some of the things we've been thinking about, and I hope that you will think about in this amazing commission you're doing, how you can engage with research. And I would add the last piece of this, is to say that all clinical research needs to be done with the populations, with the patients, with the people who need to be involved in that research. And we talk a lot now at the Academy about the co-production of research. Such questions about our research are developed with people often with those conditions, sharing ideas together and trying to think about what some of the important questions are. So thank you for listening.

**Dr. Shetty:** Thank you so much Professor Johnson. Extremely educative about research. I am being very honest with you, to say that in Indian hospitals, research is not one of our forte. Most good Indian hospitals are so overwhelmed with the patients. Historically we haven't been serious about research, and to be honest with you there is no culture of research. But I can share one of my experiences. About eight years ago, the University of Maastricht, they looked at our huge patient load. They collaborated with us for a PhD program for our Doctors, nurses, technicians, administrators, anyone who wanted to do PhD at the Maastricht University. They would support and they would evaluate, they would guide and eventually they would come up with some worthwhile paper, and the doctor or nurse would get a PhD. And to my surprise, at the end of five years we produced over 10 PhD scholars, out of the 50 or 100 enrolled. But it's an excellent track record. So what my request is, you represent one of the most prestigious research institutes in Europe. So it is very important that organizations like yours come forward and tie up with large hospitals in India for a joint research. We have everything required for coming up with something of a breakthrough, like we have huge number of patients, extremely good doctors, and all the material, but we simply do not have the culture to put those things together and present it in a forum, so that the world medical community will get knowledgeable or educated by what we have. So, would you like to ever consider collaborating with Indian hospitals? And if your university can offer a PhD program, believe me, a large number of young doctors, nurses, will be interested. This is just a suggestion.

**Prof Johnson:** Yeah, absolutely. First of all we do quite a lot of that, that'd be very good. I've got two hats on here, so let me talk to you about my academy hat. Because until recently we did have a program of some development grants with the Indian research councils. We did have a joint grant scheme, unfortunately that I think has now being discontinued. But we're very keen to maintain those relationships, and in fact I was just before the pandemic, I was in Delhi meeting your colleagues in the research councils, and we would be very keen to reopen some of those discussions. We do also have at the Academy, some professorships as well, which are on anti-microbial resistance, which are funded by a very generous donation from an Indian donor. So I'd be very happy to come back to you after this discussion with either you or Professor Kang, to discuss some of the links we have with India in the Academy. But in the UCL we have an Institute for Global Health, and I have two colleagues Professor Costello and Professor Osrin, who have been working in a number of areas in India, actually in community settings around research questions, I think I mentioned, particularly around maternal and child health. So we have had a number of PhD programs at UCL. We also have a master's program in global health in which we have many students from overseas. And we do always welcome students from overseas for PhD programs. One of the issues of course is for people to get the funding. And we did have links with the public health foundation of India, there was a program of research I think there, I’m not sure if that is still running. But people are very welcome to get in touch, or we could follow up on this conversation, but joint PhD programs I agree are a great way of proceeding, and there are a number of UK universities who offer those, and we could build on those links outside this meeting now. I think it's a really important route to take, but then one of the challenges, and I think Dr Kang might be able to comment on this, we've often discussed this, is once they've got the PhDs, you then need to have the post-doctoral fellowships and the career pathways after that which enable people to practice. When I was formerly a government welcome trust, and we made a several visits to India working with a number of the research funders in India, and I saw some amazing research that was based in very clinical research, dealing with some of the questions you raised. I saw your very amazing cardiac hospitals, doing masses of cardiac surgery, there was a lot of research going on. So it's building on that culture, and that's what we're trying to do in the UK is build the culture, because so much of the culture tends to reside in places where there are strong teaching hospitals, and we want to build it out, because we think that will build better care, and actually more efficient care for patients.

**Dr. Shetty:** Thank you so much Professor Johnson. Extremely grateful to you, we learned a lot today. Thank you. Now let's move on to our session. I would like to ask a few questions to Dr Leila Varkey. Dr. Varkey, are we ready? We have about 15 minutes left, and in this I need to ask a few questions to you, and of course to my friend Dr Biswas. So, let me start off with my first question. India, with about 45000 gynaecologists, and less than 50000 paediatricians, and half the gynaecologists not willing to practice obstetrics, do you think we can honestly bring down the maternal mortality, when we produce over 24 million babies a year?

**Dr Varkey:** So, the question really has two or three components, which I think need unpacking and answering. The first one is -what is needed to decrease India’s maternal and newborn mortality, and is India’s maternal and newborn mortality an outcome of the lack of obstetricians, paediatricians or doctors? Is that the most important factor? And then I think the other one would be - what are the ways in which one lowers maternal and newborn mortality? I think I want to step back slightly Dr Shetty, and then put it in the context of what our commission is trying to do, and then I’ll answer all three questions.

I think the biggest reason why I’m on the commission and I really support it, is the fact that this is a citizen's commission, it isn't a government commission, and it's a commission for re-imagining India’s health care for universal health coverage. And so I think that, as citizens, not as representatives of organizations, here I must disclose that this is me speaking as a citizen of India and not representing either the civil society organization that I am employed in, or even the government committees that I’m part of, but as a citizen of India, we really need to reimagine what our health care looks like in India. Is our health care built backwards? Is it one in which, currently, the pinnacle of one's career is to be an interventional cardiac surgeon? Having a cardiac surgeon asked me about infant mortality and newborn mortality, I agree with you, that may at your level seem to be a problem which is related to obstetricians and paediatricians. But as an observer, just as an ordinary citizen, and as a researcher as well, I find that as Dr Johnson mentions, we really do not have the information and the data that's needed to reimagine India’s health care. We have a skewed system in which the policies around health care were made for a country, assuming that it had a good robust public health system, and yet when we actually look at the evidence we find that our system is predominantly a private one which is unregulated, and taken more or less to the extremes of specialization, with a primary healthcare system which is functioning more or less for the rural public and for the slum population. So we do not really have a primary health care system for the in-between group. So when we talk about reimagining India’s health care, I feel as a member on the commission, we're looking at the broad stroke understanding of what India’s health care should look like, as we move towards trying to meet universal health coverage. So that's me talking as a commissioner on a platform where reimagining is what we would like to do, and in reimagining we are talking about the challenges of evidence, of collecting evidence, of understanding what our current health system is like.

So, the evidence that I can gather and the evidence that is available, and it's actually just been published maybe two days ago, and a lot of people are mentioning it, is the fact that our health system is doing two things wrong. The first one is that we have a system of incentives to join the health system at the level of entering education, by what is called a merit-based system, in which we have a national eligibility examination. What it does is, it takes anyone who has a science background in higher secondary school, and would like to join either the medical profession, the veterinary profession, the dental profession, the nursing, the physiotherapy, you name a few others, they all sit for exactly the same exam, which is highly, I would say, skewed towards a very theoretical academic merit, to reach to a level where you then get posted out based on what your scores are to different colleges. And of course, those that do best would like to go to the premier colleges across India. So that's the evidence that we have in terms of who we are getting as students and where they stand. Just last year I went to a very premier institution where community health is really their mainstay, but they also have an excellent department of obstetrics and gynaecology and paediatrics that deals more with Central India’s rural population. And what do I find? That this examination is also being used to take in nurses. Now nurses come from a completely different motivation and a different background usually.

Nursing is at the crux of both art, science and skill. The sort of people who go into nursing are those who are willing to be hands-on practitioners, willing to take orders, yes, because there are some that they need to but at the core of it, it's a caring profession, with perhaps a more psychology, sociology kind of background, it doesn't fit into this kind of examination-based merit system. And so, what is the rank of the students that go and take nursing? I'll give you any guess, but it's more in the after 50000 rank at which people are coming in. So when you ask the college of nursing faculty who are the students you're getting, they're saying we're getting really bad students. we're not getting anyone who wanted to come into nursing, we're getting those who were really disappointed, didn't get what they want, and so you know they need an occupation, that's not the sort that we need in nursing. So I'm just giving you an example. All right, the other one as I mentioned, was your data. You've mentioned a certain number of obstetricians, gynaecologists and paediatricians, and are they enough for a country. Our commission has decided through this work stream that is working on the area of human resources for health, to look at a district as our practical unit for understanding health resources, and what we find is that this unit requires an administrative structure and also requires a cascading understanding of where different practitioners stand, because it's in a team that they work.

So, to give you an example of states that have community health centres, this is where data comes from. We have many states where community health centres which are supposed to serve a population of about a hundred thousand, that's one lakh or more, up to maybe 150000. What do we find? That this unit of doctors who supposed to provide the basic level of secondary care, and early intervention, are a surgeon, an obstetrician, a paediatrician and anaesthesiologist and general medicine. However, they do not always want to work together as a group, they prefer working in practices where they have other colleagues in their own departments, fair enough. They can't work 24 hours, they burn out if they do, if there's only one of them of each kind, and so they don't go there. Or they get stuck there and they feel that they have no other further promotion there. And so in a country that has been running this system for the past 20 years, we still have states on average with vacancies at the level of 50 percent, up to 80 or 90 percent of these doctors. So when you ask me that question about where the obstetricians are, and where the paediatricians are, I'm sorry I don't have the data, because the private sector is not necessitated to give this data, but I could be absolutely certain that the majority of them are in the metropolitan cities running either standalone, or specialty clinics, where they work. And if they are present in the public sector, they are most likely in the medical colleges or in the district hospitals. So that's just bare bones data, and I think I’ll stop there. I would love to tell you how we have worked with the government to lower maternal mortality and new-born mortality by increasing the emphasis on the types of care that nurses and auxiliary nurse, midwives can provide, and by increasing the possibility of having nurse practitioners in midwifery, but I think that's a different question, so I'll stop there with that one. Thank you.

**Dr Shetty:** Thank you very much Dr. Varkey. It's just that, we are left with just five minutes. Let me ask one question to Dr Bhabatosh Biswas, he has been waiting patiently for more than an hour. Bhabatosh, you are the vice-chancellor of one of India’s most prestigious universities, West Bengal Medical University. I just want to ask you one question. What is your opinion about hospitals with over 100-200 beds with good clinical faculty, offering ANM courses for students who have finished their 10th standard, and GNM courses after that, so that girls and boys from poor families get to become ANMs or GNM nurses without spending any money. At the same time, during the training program, they may be able to send some money home to take care of their old parents. Because in India we have the medical education system which is totally funded by the parents. Going by that concept, 50 percent of the students of the country cannot get into higher education, because the parents simply cannot. So, if the hospitals take on these responsibility of educating them in the hospital setting, and teaching them online and all, the other theoretical part, what is your opinion?

**Dr. Biswas:** This is excellent proposition, what should be implemented immediately. Normally, nursing education is now struggling with lot of funding, financial constraints. Nursing education expensive in this country. Government hospital has got limited number of seats, and large number of seats are available in private sector, BSc MSc onwards, and they are expensive. And that doesn't really serve a purpose. What you asked is close to my heart, nursing education should be made fully free. The girls and some boys coming from poor backgrounds, they are the usual takers. These candidates should be encouraged to take nursing education in all hospitals, 100 or 200 beds. What I think, a 100-bedder hospital having multi-specialty facilities, in urban areas and rural areas, even smaller hospitals we can take. These hospitals have basic core subjects like medicine, gynaecology and paediatrics. And these doctors are experienced doctors, so if we attach girls for training in these hospitals, they will get a very good hands-on training. This training should be free, they should not be charged any money. Additionally they should be given free accommodation, free food and they should be working during their training period, as you rightly said, in between they will have theoretical classes, maybe online, or small period of time say, out of 18 hours a day, eight hours shift they will work with the patient. This will hands on, sometimes initially just a foundation course, then at the OPD, then IPD, sometimes in OT, sometimes labour room, sometimes critical care, they will rotate with senior doctors and senior nurses, and that will be excellent hands-on training. They will have reasonable theoretical classes in odd hours, maybe online, sometimes contact classes, and this training should be excellent and it should be free and they should have given stipends, so that these girls usually come from poor families who are bonded labour, by generation they are labourers, migratory labourers. They cannot afford funding for the children. These people earned by physical labour. When they grow around 50 years old, by this time these girls are maybe 20 years or so, by the time these parents lose their energy to work hard, so they cannot earn and they depend on the earning of their children for the livelihood. So these girls coming from poor families, local areas, if they are taken in training in hospitals maybe 100-200 beds, they will then work, they will be having the training and they will be earning something to send to their home for the parents. Once they train, say for three years, or initial two years as an ANM, let them work for two years in a hospital, in contract, after that they may be given another chance to be trained as GNM, and after that they can go for BSc and MSc, that may be as per usual system. So, training nurses in all the existing hospitals, with free education and giving stipend, that is an excellent proposition that can produce large number of nurses. If you look at the other side, nursing jobs are open across the world. After Covid, what we believe large number nurses will go to UK, US and many other countries, because they need nurses. And entry examination has been erased, or maybe made lighter. So once a large number of nurses leave our country and go to other countries, we will be struggling in number of nurses. And having all the requirements of nursing council, that this much of land, this much of building, this many faculty, this is ridiculous, this cannot produce quality nurses. So I conclude by saying, nursing training should be given absolutely free. There should be stipendiary, they should be learning on job, under the supervision of senior Doctors and Nurses and in busy hospitals. That will produce quality nurses, and number of nurses, and that will be the backbone of healthcare for our country, as well as we'll be able to export nurses to other countries to earn foreign currency too.

**Dr. Shetty:** Thank you. I'm extremely grateful to all our speakers, Professor Johnson, Professor Varkey, and Bhabatosh, for a wonderful presentation. Gagandeep, I'm extremely grateful to you for giving me the opportunity to moderate the session. I think we have already run out of time. Thank you so much.

**Dr Kang:** I just wanted to thank all the speakers, and you, Devi, for moderating this session. I think this is a starting point, we've been working within the health resource work stream to try and figure out what is the best way of thinking about the structure, and the function of healthcare education in India, and we clearly have a lot to off work to do. But learning from Thailand about how they're managing their rural and their specialist training, and learning from the UK, about how they are actually building research into undergraduate and postgraduate education, and functioning of staff that work within the health system, is really valuable for us. So, thank you all very much for agreeing to participate in this, and I hope that all of you will be accessible to us for further discussions. Thank you.