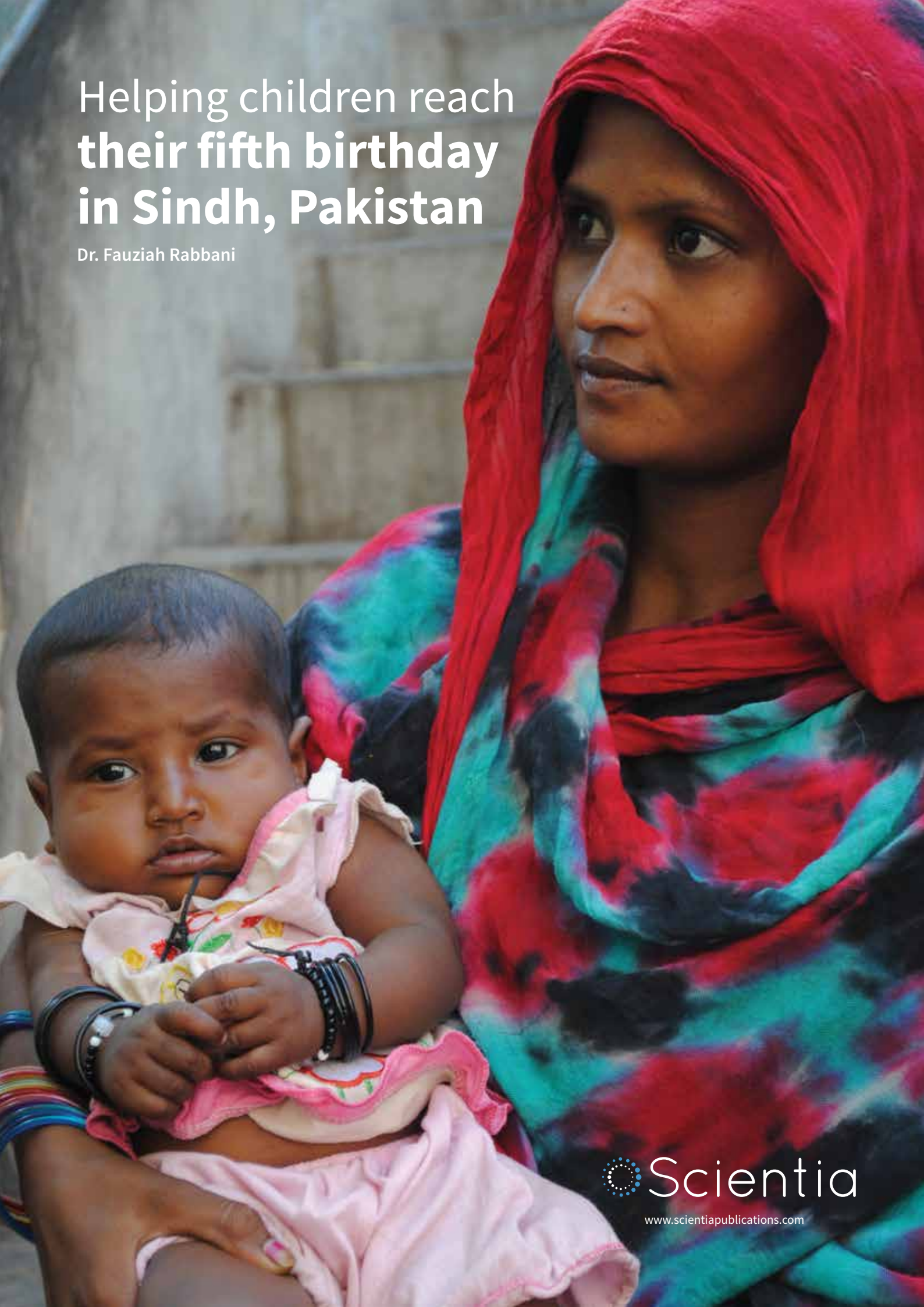

Helping children reach **their fifth birthday in Sindh, Pakistan**

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Dr. Fauziah Rabbani of the Aga Khan University, Karachi has been at the helm of Project NIGRAAN since its inception in 2011. In this interview she discusses how the project has progressed and the measures being taken by policy makers to support the development of frontline healthcare in Pakistan.

To start, please tell us about your background.

I have been working as a public health specialist for the past 26 years and I am currently head of the department of Community Health Sciences (CHS); one of the largest departments of the medical college at the AKU Karachi, with 38 faculty and 170 staff. I am a health systems expert with a focus on implementation research. I have written several book chapters, indexed technical reports and I have more than 60 peer reviewed publications to credit.

My qualifications include MBBS (Karachi), MPH (USA), FCPS (Community Medicine) from College of Physicians and Surgeons Pakistan, FRCP (Edin) and PhD (Health Systems Research) from Karolinska Institutet Sweden.

How did Project NIGRAAN come to be?

Like other health system experts I have always felt that a critical challenge Pakistan is facing is 'governance within the health sector'. While focus on particular diseases or services is important, literature has shown that weak health systems and poor policy planning result in unnecessary child deaths; many never reach their fifth birthday.

In 2011, I participated in a meeting held by the Health Services Academy Islamabad where experts from the World Health Organisation (WHO) Alliance for Health Policy and Systems Research (AHPSR) conducted a workshop on setting priorities in health research investments using a validated systematic methodology called Child Health and Nutrition Research Initiative (CHNRI). Based on CNHRI criteria an implementation research question that we presented scored highly during this meeting. The question posited whether supportive supervision of Lady Health Workers (LHWs), a governance issue, by Lady Health Supervisors (LHSs) could bring about a decline in child mortality due to pneumonia and diarrhoea.

Later in the year we were invited to a refinement and protocol development workshop by WHO in Islamabad. It was here that Project NIGRAAN was technically conceived. A follow up meeting in 2013 was held in Montreux, Switzerland with the final proposal submitted in February 2013. Funding approval was received in May 2013 and the contract between AKU and WHO for NIGRAAN execution was signed in August 2013.

What are the main outcomes you hope to see from Project NIGRAAN?

The primary outcome is improvement in Community Case Management (CCM) of childhood diarrhoea and pneumonia in District Badin (rural Sindh). This would, in the long term, bring about a decline in childhood mortality among under-fives (Millennium Development Goal 4).

How will you judge the success of the main outcomes?

Through quantitative baseline and end-line community caregiver surveys, focus group discussions and key informant interviews with health workers/other stakeholders. The knowledge and skills of health workers will be measured via scorecards.

What are the secondary outcomes you hope to see emerge from Project NIGRAAN?

Improved knowledge, skills and supervisory processes among LHSs for CCM of pneumonia and diarrhoea in children under five. This will in turn lead to an improvement in knowledge, skills and performance of LHWs through structured supportive supervision by LHSs. Finally there will be improved knowledge of community caregivers through interactions with LHWs and LHSs during community case management of children with diarrhoea and pneumonia.

Project NIGRAAN lasts almost 24 months, what are the most significant changes you've seen in this time?

There has been improved communication and co-ordination between LHSs and LHWs. LHSs now accompany LHWs during follow up visits to the household and have more of a problem-solving approach. There has been improved knowledge and skill scores of LHSs in terms of diarrhoea and pneumonia following training

A Lady Health Supervisor is counting respiratory rate of a sick child at Civil Hospital Badin during her clinical assessment

and regular monitoring through NIGRAAN. A written feedback system has helped this.

How can LHW and LHS improve their knowledge?

Regular refreshers on Lady Health Workers Programme (LHW-P) curriculum and clinical skills and mentorship training courses is the only way to improve knowledge. Unfortunately this has not been available for the last few years for LHWs and LHSs.

How has the national and regional government in Pakistan supported your work?

In January 2014 the first executive project management team meeting was held. The meeting provided a platform to bring decision makers and implementers together. A dissemination seminar in August 2015 sensitised participants regarding the use of evidence in health system decision making. Provincial and regional health departments will be incorporating the value of written feedback from LHSs to LHWs in their public policy development documents.

What can the international community do to combat child mortality?

Endorse and ratify through various conventions that access to good quality health care is a fundamental human right. Declare that any child dying due to diarrhoea and pneumonia in the presence of proven lifesaving community based interventions which can readily be delivered through peripheral health workers at their doorstep is a crime.

Overcoming the paradox: Children in Sindh dying in the presence of a vital human resource available at their doorstep

Aga Khan University, Karachi, is the leading academic institution within Pakistan. The Community Health Sciences Department has 38 faculty and 170 staff, who work on a number of projects including those focused on the improvement of health systems through implementation research. One of these is Project NIGRAAN, a WHO-funded project targeted at childhood mortality.

Diarrhoea and pneumonia are currently the leading killers of children under five worldwide. Indeed, according to the WHO, 2195 children die of diarrhoea, and 2561 will succumb to pneumonia every day. This means that in the minute or so it takes to read the next few paragraphs, three children will have died without ever having had the chance to go to school, to learn to read, or to do any of the things which we take for granted in our lives. This is a shocking statistic, and indeed one of the UN Millennium Development Goals is to reduce these deaths by at least two thirds. Unfortunately the majority of these deaths occur in rural, remote, and under developed areas, where distance and transportation time limit access to the hospitals and medical clinics which could otherwise treat the patients. Indeed, treatment for both of these diseases has been well established: antibiotics to kill the pneumonia-causing bacteria, Oral Rehydration Therapy (a solution of salts in water) to support the patient during their diarrhoea. Actually providing these treatments is another challenge – one that depends upon getting reliable medical support into remote areas.

One country that has been making major inroads into this problem is Pakistan. With almost 200 million inhabitants and a strong industrial base (as well as some exceptional cricket players), Pakistan is considered to be one of the up-and-coming economies (identified by investment bank Goldman Sachs as one of the 'Next 11'). However, the majority of the population is located along the Indus River, leaving large swathes of land to the north and west that are thinly populated and lacking in the amenities more common in the heavily populated cities. Indeed, despite their future prospects, Pakistan currently suffers from approximately 700,000 diarrhoea and 350,000 pneumonia cases annually in under-fives, only 40% of which are adequately treated. To prevent this, and to provide medical treatment across their entire population, the government of Pakistan has developed a number of programmes including those reaching out to local communities at their doorsteps.

THE LADY HEALTH WORKER PROGRAMME

One of these programmes is known as the "National Programme for Family Planning and Primary Healthcare", which is almost universally referred to as the "Lady Health Workers Programme (LHW-P)". This programme relies upon the recruitment of women from local communities to act as health care workers, able to provide basic services to women and children including vaccinations needed for polio. These women, known as Lady Health Workers (LHWs) are usually responsible for catchment areas of 100-150 households (approximately 1000 people), and are provided a salary by the government. Importantly, they must have completed at least 8 years of schooling and need to be a resident within their catchment area, thus encouraging connections with the people under their care.

These LHWs are then supervised by Lady Health Supervisors (LHSs), who are essentially experienced LHWs with additional training. Each supervisor has 20-25 LHWs working under her, and they are responsible for ensuring that treatment is adequately provided, collecting information on cases, and acting as an interface

A Lady Health Worker assessing a sick child for dehydration at a household in District Badin

between LHWs and the senior staff of the health care system. Overall, approximately 60 percent of Pakistan's population is covered by the Lady Health Workers.

Unfortunately there are a few problems with the programme that still need to be optimised, in particular with regards to the supervision of LHWs. An in depth evaluation indicated that slightly over 40% of supervisors never visit households covered by LHWs, as part of a joint visit or consultation. Feedback is limited: 61% of LHWs never received comments regarding their performance, while only 5% were ever informed that their performance was unsatisfactory (contrast this to reports from supervisors stating that they had personally informed LHWs in 85% of cases). This lack of supervision and feedback means that the LHWs cannot correct mistakes and develop their skills, which in turn limits their effectiveness in treating childhood diseases.

Somewhere in the world, pneumonia and diarrhoea will kill three children within the next minute. Project NIGRAAN hopes to break this deadly chain.

NIGRAAN

To fix these shortcomings, funding has been obtained from the World Health Organisation for a project known as NIGRAAN. Coordinated by Dr. Fauziah Rabbani of the Aga Khan University, NIGRAAN ('supervision' in Urdu, Pakistan's lingua franca) reflects the target aim of improving supervisor skills within the Lady Health Worker Programme. NIGRAAN is set up as a cluster-randomised trial currently running in District Badin, approximately four hours from Karachi (Pakistan's largest city, and indeed the second largest in the world). Badin has a total population of 1.1 million, covered by 1100 LHWs, who are in turn supervised by a total of 36 LHSs.

Of these health workers, 34 supervisors were chosen and randomly assigned (17 each) to either a control group or a group that would receive the enhanced 'NIGRAAN Training'. During the exploratory pre-intervention phase a questionnaire based household survey asking caregivers their opinions on LHW skills, reliability, and importance of LHW-P was conducted. A total of 170 LHWs (five for each supervisor) were then randomly selected for in depth knowledge and skill assessments using scorecards. Focus group discussions and in depth interviews were held with health workers, determining their opinions, experiences, and skills in both healthcare and supervision. Results indicated that the training level of LHWs and LHSs was sub optimal, with the overall knowledge of both diarrhoea and pneumonia falling below the desired level for the programme. Health worker knowledge was significantly better for diarrhoea than pneumonia, while 18% of the LHWs could correctly diagnose and advise treatment for diarrhoea, none could perform as well for pneumonia cases. Supervisors were slightly better, but often lacked clinical skills due to their lack of recent experience in the field. This lack of experience was also noted by households being served under the programme, as the majority of mothers surveyed (97%) would rather go directly to a doctor for treatment.

Following this initial information gathering stage, the project moved into the intervention phase. All supervisors were given a two day refresher training course, following the usual LHS curriculum, with a generalist focus. The supervisors included in the 'intervention arm' were then given a further four day course, this time with a specific goal of increasing knowledge of childhood pneumonia and diarrhoea. The course also included workshops on supervisory and communication skills, as well as 'hands on' teaching at a local hospital. Beyond this, the supervisors were given more comprehensive checklists for their supervisory roles, as well as report cards, these were intended to increase the likelihood of providing written evaluations to their LHWs.

SMS FOR A CURE

One facet of the NIGRAAN project involves steps to improve the overall flow of information between LHWs, their supervisors, and other senior staff within the healthcare system. As such, NIGRAAN also provides additional provision for increased case surveillance, essentially improving the detection and data gathering associated with each incident of suspected diarrhoea/pneumonia. A fixed protocol has been developed for obtaining information from the caregiver of the sick child by the LHW, notifying the immediate supervisor via SMS, and then planning a follow-up visit together. The LHS is then responsible for commenting on disease treatment by the LHW, including written feedback, and informing the central data manager at the same time. All cases of pneumonia or diarrhoea are logged, with GPS coordinates indicating precisely where they have occurred.

Improvements in feedback are provided by the emphasis on written performance evaluations, (which did not previously occur), intended to formalise the process of providing feedback and thus improve supervision quality. By providing every LHS of the Lady Health Worker Programme in Badin with a mobile phone (and LHWs with a communication allowance), NIGRAAN also improves the instantaneous flow of important information, removing the previous reliance on occasional face-to-face meetings or written reports. The development of this SMS based reporting system has almost doubled pneumonia and diarrhoea case reporting, with the vast majority of new cases being reported within 24 hours. Mobile phone based systems are enhancing numerous fields across many developing countries (witness the major changes caused by the African mobile banking system, M-PESA, for example), and so it seems only natural that they can be harnessed to improve healthcare outcomes as well.

EXAM WEEKS

The final six-month post intervention evaluation of knowledge and skills of LHWs and LHSs is due at the end of 2015. During repeated assessments conducted in the intervention phase it was observed that the general knowledge of pneumonia and diarrhoea increased dramatically with an almost three fold boost in test scores amongst LHSs given training. Supervisory skills were also noticeably improved, with the increase in supervisory scores in LHSs given NIGRAAN training being almost double as compared to those given no training. This is also evident in the sudden increase in feedback, with greater numbers of supervisors providing written feedback to their LHWs. This supportive supervision has translated into a two-fold increase in LHWs' knowledge and skills pertaining to diarrhoea and three-fold for pneumonia. Most importantly, there has been a boost in the level of community interaction observed. Supervisors are now more likely to accompany LHWs into the field, while the project has, in the words of one LHS, "helped us in restoring our contact with the community".

ONWARDS AND UPWARDS

So where to from here? Preliminary results from this study are, as previously mentioned, very promising. Those involved at all levels are interested in expanding the programme to larger parts of Pakistan, although a few kinks remain to be worked out first. Training systems need to be modified slightly to include more hands on work, and to encourage LHSs to be more direct in their mentoring of LHWs. The salaries available for LHWs and LHSs need to be regularised, as does the availability of transport within the areas of responsibility. And finally the availability of medical supplies needs to be enhanced, many caregivers of children commented that they would not bother seeing a LHW due to the likelihood that there would be no suitable medicine available.

Once these problems have been solved, however, the lessons learned from NIGRAAN will be extended across Pakistan and possibly into other countries. Dr. Rabbani is looking forward to the moment when this will occur; one of her deep-seated beliefs is that "access to good quality health care is a fundamental human right". Through the hard work of those such as her and the many LHWs and LHSs involved in the project, this universal access to healthcare may be closer than we think.

Researcher Profile

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Dr. Fauziah Rabbani is the Head of the Community Health Sciences Department at Aga Khan University in Karachi. The department is one of the largest in the Medical College with 38 faculty and 170 staff. Dr Rabbani also simultaneously heads the health systems and policy research group at CHS, she teaches at undergraduate MBBS level and directs courses in Health Systems Research and Quality Management at graduate level. Dr. Rabbani is a visiting scholar at the Karolinska Institutet, Sweden and has academic collaboration with the Royal Tropical Institute of Amsterdam, DokuzEylul University, Turkey and the Chinese University of Hong Kong to name but a few. She is a visiting professor at ISTUD Fundazone Italy. Her work has won many accolades including a gold medal in research from the Pakistan Academy of Medical Sciences, the Commonwealth Award of Excellence and the WHO UNISOL prize. Dr. Rabbani is a health systems expert with a focus on implementation research, her work has been published in over 60 peer reviewed publications and several book chapters.

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FUNDING
Alliance for Health Policy and Systems Research, World Health Organisation, Geneva

Project NIGRAAN