

# Global Perspective on Developmental Care in Iran

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## Greetings (Durood! درود) from Iran to the world

Iran has a history of over 3,000 years and is home to one of the oldest known civilizations. It is the 18th largest country in the world and the 17th most populated nation. Iran is one of the world's most dynamic and prolific centers for art, architecture and literature. Inspired by various schools of thought and ideologies, artists, architects and literary figures alike have made Iran into the unique center of creativity and ingenuity it is today. As Asia's fourth largest United Nations Educational, Scientific and Cultural Organization World Heritage Site, Iran houses many historical sites and tourist attractions in various provinces and cities.

## Newborn Infant Health in Iran

Neonatal medicine officially began in 1988 with the construction of the country's first NICU. The specialty became established with the founding of the Iranian Associations of Neonatology and of Perinatology in 1998 and 2003 respectively. These associations supported the continuous expansion of the number of Neonatal Intensive Care Units (NICUs) and of trained perinatal health care providers. Iran has made substantial progress in neonatal health with the neonatal mortality rate (NMR) declining from 27 deaths/1000 live births in 1990 to 8.6/1000 in 2017. Despite the progress, Iran's NMR is considered average, leaving room for improvement, especially considering 57% of deaths in children under 5 years occur in the neonatal period (2017).<sup>1</sup>

## Establishment of Developmental Care and NIDCAP

Marzieh Hasanpour, PhD was a faculty member at Isfahan University of Medical Science (MUI) when the Neonatal Intensive Care Nursing Master's Program was launched in 2009. She led the pediatric nursing department and taught developmental care topics based on the work of Als,<sup>2</sup> and Kenner and McGrath.<sup>3</sup> That same year, a brief visit to the UCSF Children's Hospital and Nursing School in San Francisco, USA, enabled the start of a developmental care strategy to be used in Iran.

Following this visit, Dr. Mohammed Heidarzadeh, Chief of the National Neonatal Health Office, who had a long-standing interest in developmental care and educating using the Training of Trainers Model (TOT),<sup>4</sup> suggested project collaboration



with the Ministry of Health (MOH). In a 2013 meeting at the MOH, Dr. Hasanpour presented information about NIDCAP and recommended inviting foreign trainers and the model's founder to train a national group in NIDCAP.

The request was approved and plans were made to host Iran's first developmental care (NIDCAP) course at Isfahan University of Medical Sciences. Dr. Heidelise Als and Dr. Nikk Conneman accepted the invitation to provide training. UNICEF provided financial assistance for the program and Mr. Amirhossein Yarpourvar, a UNICEF representative, helped coordinate. A memorandum of agreement was signed by the NIDCAP Federation International (NFI), UNICEF, and the Nation's Neonatal Health Office to plan and provide NIDCAP in Iran. During planning in 2013, Dr. Hasanpour became a member of the NFI. Additionally, she spent two weeks under Dr. Dorothy Vittner's supervision in the WakeMed NICU at the Carolina NIDCAP Training Center in Raleigh, USA and a few days with Dr. Juzer Tyebkhan in the Royal Alexandra NICU at the Edmonton NIDCAP Training Centre, Canada. Finally, a highly successful five-day workshop occurred in October 26-30, 2013, with 65 experts from across Iran, including officials from the Ministry of Health's Department of Neonatal Health, representatives from UNICEF, and international trainers Dr. Als and Dr. Conneman.

**Figure 1:** Timeline of developmental care implementation in Iran<sup>1</sup>

2012	2013	2014	2015	2016	2017	2018
Introduction of NIDCAP to neonatologists and nurses	<p>First NIDCAP workshop for 65 personnel from different universities</p> <p>Study visit to the Netherlands</p> <p>MOHME formally adopted NIDCAP</p>	<p>First National Iranian committee for NIDCAP</p> <p>First survey on NIDCAP to 23 hospitals and 9 universities</p> <p>Preparation of 4 Iranian Centers for NIDCAP Training</p>	<p>Visit to Sophia Hospital in the Netherlands</p> <p>Iranian trainers for NIDCAP chosen</p> <p>Four training sessions provided by Drs Als and Conneman</p> <p>Trainees worked to incorporate NIDCAP in their NICUs</p> <p>Spiritual and holistic care in the NICUs</p> <p>Budget allocated for NIDCAP</p> <p>Introductory NIDCAP workshops in 13 universities</p> <p>NIDCAP introduced at numerous conferences</p> <p>Workshop for Nursing Academia at Iran Medical Center</p> <p>Translation and adaptation of NFI documents for NIDCAP program</p>	<p>Two-day NIDCAP Seminar in Tehran for 350 participants</p> <p>Developmental care packages prepared</p> <p>Final NIDCAP training completed, and 10 trainees certified as NIDCAP Professionals under Dr Als</p>	<p>NIDCAP training completed in Tabriz and Shiraz</p> <p>16 NIDCAP Professionals</p> <p>Support for scientific references for neonatal program</p> <p>17 NICU pediatricians, neonatologists and nurses in Tehran, Tabriz, and Shiraz certified as NIDCAP professionals</p> <p>Support to scale-up NIDCAP nationally through two training workshops for 134 experts from 19 medical universities and nursing midwifery faculty</p>	<p>Support for NIDCAP Professionals to maintain their membership of the NFI</p> <p>Support for the assessment of NIDCAP in NICUs based on the minimum standards for NIDCAP</p>

After the workshop, a national agreement was signed by the MOH, UNICEF, and the NFI selecting four hospitals with NICUs to implement the developmental care (NIDCAP) pilot program: Hafez Hospital in Shiraz, Al Zahara Hospital in Tabriz, Mahdihyeh Hospital in Tehran, and Valiasr Hospital in Tehran. As a result, the National Developmental Care Committee was established. Dr. Hasanpour and Dr. Heidrzhadeh, along with eight others, trained with Dr. Als in Tehran, and Dr. Conneman provided training in Tabriz and Shiraz to eight persons. All, except two who withdrew from the program, were certified as NIDCAP Professionals in 2016 and 2017, leaving a total of sixteen graduates.

Additionally, Iran actively participated in World Prematurity Day and World NIDCAP Day (WND) events. Activities were photographed for posters and shared with the NFI. Every semester, NIDCAP bedside observations are taught to neonatal nursing master's students. Some NFI teaching materials for parents were translated into Farsi for the NFI website. The Farsi segment of the Incubator Podcast (sponsored by Chiesi) invited Dr. Hasanpour to speak about WND 2024 and share 10 pearls of wisdom along with the NIDCAP care model.

### Insight into Developmental Care in Tabriz

Al-Zahra Hospital, an academic perinatal hospital located in northwestern Iran and affiliated with the Tabriz University of Medical Sciences, has 50 NICU beds, 20 neonatal beds, and 10 Kangaroo Mother Care (KMC) beds. Dr. Mohammad Bagher Hosseini is a Professor of Neonatal-Perinatal Medicine, a

NIDCAP Professional, and the Head of the NICU at Al-Zahra Hospital.

During 2015-2017, two nurses and two physicians were trained and certified as NIDCAP professionals. Three remain at the hospital and are dedicated to training clinical nurses and specialist and sub-specialist assistants in developmental care. Developmental and supportive care for premature infants starts in the Operating and Labor and Delivery rooms. About 80% of NICU care is provided as four-handed care. Infant sleep support, pain management during painful procedures, and KMC are optimal. Mothers not yet discharged from the hospital are present at their baby's bedside three times a day accompanied by maternity unit staff. After their discharge, they are free to be with their baby 24 hours a day and play an active role in caregiving.

Due to limited physical space and insufficient privacy, fathers are present at the baby's bedside twice from 12-1 and 3-4 PM and, of course, in a coordinated and flexible manner at other times of the day and night. They participate in their baby's feedings and kangaroo care. The NICU environment is good in terms of light and sound. Only during the shift handover is the sound a little above the desired level. All preterm babies receive individualized care in a supportive nest and older babies are swaddled.

Facilities are available for mothers in the neonatal unit and the NICU, including a kitchen, bathroom, library, and a room for mothers' rest. About two years ago, the continuous KMC



Dr. Mohammad Bagher Hosseini and Dr. Marizeih Hasanpour

department started and is the first continuous KMC department with comfort facilities and 24-hour presence of mothers in Iran. Recently, a speech therapist was added to the NICU care team.

In the 2015 initial evaluation by the MOH, this centre obtained the highest average score<sup>10</sup> for developmental care implementation out of 23 NICUs selected in the country. Overall, Al-Zahra's NICU score is 3-4 for the NIDCAP Nursery Assessment Certification Program. The occasional high patient census and lack of facilities for the permanent presence of fathers are among the current challenges. We are very interested in expanding developmental care programs in our unit and across the country if more support becomes available from the MOH and the NFI.

### NIDCAP Certifications

During Dr. Conneman's last visit in April 2017, NIDCAP certification was achieved for the 16 neonatologists and nurses working in the four pilot hospitals. Table 1 (below) shows the distribution of NIDCAP certified professionals per pilot

hospital. At the time of this writing, 12 certified health professionals remain active. Ms. Zahra Eskandari moved from Mahdijeh Hospital to the Ministry of Health and Medical Education (MoHME), and later to Ali Asghar Children Hospital (Tehran). Dr. Keyvan Mirnia moved from Al-Zahra Hospital in Tabriz to the Tehran University of Medical Sciences in Tehran. Dr. Parisa Mohagheghi moved from Mahdijeh Hospital to Ali Asghar Children Hospital (Tehran). Dr. Nikoo Niknafs and Dr. Jila Mirlashari moved abroad. Ms. Zahra Godarzi retired. Mohammad Heidarzadeh moved from MoHME to the NICU in Zahedan University of Medical Sciences. Ms. Ameneh Abroon retired.

### UNICEF Support and Evaluation

UNICEF support towards NIDCAP was aligned with MoHME strategies and priorities. NIDCAP was also consistent in responding to newborn and parent needs and the development of health professionals' skills. Improving neonatal care has been a priority for the MoHME. The healthcare reforms put in place since 2014 prioritized maternal and child health, including neonatal health. At the NICU level, willingness to evolve professional practices and the commitment of healthcare staff facilitated the introduction of the NIDCAP approach and principles. Overall, NIDCAP benefited from national leadership and an enabling environment, despite some resistance to change at the NICU level. Additionally, in Iran, NIDCAP is a gender and culturally sensitive intervention.

### Effectiveness

Evaluation shows good improvement due to NIDCAP, including a focus on care for preterm newborns, upgrade of physical spaces and equipment, and adoption of new protocols and clinical procedures in the pilot NICUs. Previously, ad hoc programs like KMC were implemented in a few units, but NIDCAP resulted in broader changes. Health professionals got involved in developmental care and interest in this field emerged.

Today, the presence of mothers around the clock in all units is considered normal whereas before they were only allowed to be there during visiting hours. Downstream effects with only

**Figure 2:** Initial Distribution of NIDCAP Training in pilot hospitals.<sup>1</sup>

NIDCAP Certified Professionals	Hafez Hospital (Shiraz)	Al Zahra Hospital (Tabriz)	Mahdijeh Hospital (Tehran)	Valiasr Hospital (Tehran)	MoHME	TOTAL
<b>Neonatologists</b>	Dr Seyed Mostajab Razavi	Dr Keyvan Mirnia Dr Mohamad Baqer Hosseini	Dr Parisa Mohagheghi	Dr Hosein Dalili Dr Nikoo Niknafs	Mohammad Heidarzadeh	7
<b>Nurses</b>	Ms Masoumeh Pakrouh	Ms Marzieh Sami Ms Hamideh Nikzad	Ms Elaheh Rastkar Ms Zahra Eskandari (Ali Asghar Hospital & MoH)	Mrs Zahra Godarzi Ms Ameneh Abroon Dr Marzieh Hasanpour Dr Jila Mirlashari (Faculty of Nursing)		9
<b>TOTAL</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>16</b>

## "Iran undertook an innovative approach for the implementation of developmental care and NIDCAP across the country"

some evidence include the improvement of the quality of care and reduction in preterm morbidity. However, publications in specialized medical journals regarding NIDCAP benefits in Iran constitute a source of rigorous information that attest to a generally positive appreciation of the introduction of NIDCAP.

### Efficiency

With a modest level of external funding, NIDCAP has had a positive leverage effect on promoting developmental care in Iran. The introduction of NIDCAP helped four NICUs adopt a family and baby centered approach and improved newborn care standards. It also stimulated biomedical research and scientific publications in this field.<sup>5-12</sup> The absence of a logical framework for the program and a structured planning, reporting, and monitoring system has, however, hampered capturing progress and challenges. NIDCAP as a "pilot project" here has not been able to capitalize on and showcase learnings and good practices emanating from its implementation.

### Sustainability

Overall, the MoHME and the four hospitals have the capacity and means to maintain NIDCAP standards of care without external support. However, the high workload in the four NICUs seems to affect the performance of health professionals, which may result in care variability and a gradual decline in NIDCAP care standards. From a health systems perspective, NIDCAP in Iran has not matured enough to allow for scalability and to continue developing local capacities.

### Conclusion

Iran undertook an innovative approach for the implementation of developmental care and NIDCAP across the country. A pilot project in four NICUs was funded by UNICEF and supported by the MOH. From a health system perspective, NIDCAP contributed to changing mindsets about neonatal care and reinforcing national capacities in developmental care. A major achievement is the positive impact on newborn caregivers. As part of broader efforts, NIDCAP helped transition from traditional task-oriented NICU care to newborn and family centred, developmentally supportive care in the four piloted NICUs. The program, however, did not achieve all NIDCAP standards and did not meet initial ambitions such as the creation of a



Dr. Heidelise Als with Dr. Marizeih Hasanpour

NIDCAP Training Centre in Iran and establishment of Centres of Excellence. Most NIDCAP certified professionals continue working in different NICUs and represent an asset the health system can continue to leverage to relaunch NIDCAP both in pilot hospitals and other hospitals.<sup>1</sup>

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