The John W. Ryan Award for Distinguished Contributions to International Programs and Studies this year honored E. Angeles Martínez Mier, associate professor in the IU School of Dentistry. The award recognizes Martínez Mier’s two decades of work towards improving the health of communities in Mexico, Indianapolis, and around the world and in building new academic models of dental education that enhance the international perspective of the field.

Martínez Mier has been an internationalist as long as she can remember. She grew up in Mexico, Texas, and Colombia, and as a teenager followed her father, a civil engineer, every summer to countries in South America. She comes from a family tradition of questioning and challenging. Her grandparents left Spain for Mexico because of ideological conflicts and in search of better opportunities. Her grandmother was the second woman in Mexico to enroll in dental college, a tradition followed by her mother, Angela Mier Vidal, who became a dentist in the early 1970s. “I was her patient when she was a dental student,” Martínez Mier said.

When faced with decisions about her own career, Martínez Mier said, “I was truly undecided between
medicine and dentistry. I went through all the decisions that everybody makes when thinking about a career. But definitely my mom had a part. Growing up in a dental office played a big role. I knew what being a dentist meant.” She earned her first degree from the Universidad Nacional Autonoma de Mexico in Mexico City, and then came to Indianapolis with her husband to complete specialties in preventive dentistry and periodontics. “My husband was interested in business. We looked at places all over the United States and found that the IU M.B.A. and the School of Dentistry were both top ten.”

Martínez Mier was also committed to learning about scientific research and its power to inform clinical practice. “Periodontics was the most evidenced-based specialty when I went to dental school in Mexico. When I got to Indianapolis, I found that clinical practice in every specialty could be evidence-based.” Distinguished Professor George Stookey became her mentor. As an IU graduate student in the 1950s, Stookey worked in the labs that produced and tested the first fluoride toothpaste. Martínez Mier took up that interest and to this day conducts research into fluoride, its mechanism for protecting teeth, and its effective use in community health. “With fluoride, if you go below a certain dose, there is no beneficial effect; if you go above, there are detrimental effects, so monitoring intake becomes crucial. For decades, we have gotten fluoride from toothpaste. Now we also get it from fertilizers and from medicines, so in public health the ‘right amount’ is a moving target.”

Martínez Mier chaired a panel that reviewed the evidence studying sources of fluoride. As a result, the Environmental Protection Agency recently changed its recommended concentration of fluoride in water. “It’s our obligation as professionals to continue monitoring and studying. We have to get it right.”

After completing her master’s in dental sciences, Martínez Mier returned to Mexico to work for two years. She then came back to Indianapolis to join the School of Dentistry faculty and to complete her doctorate in dental sciences. “When I came back as faculty, I knew I wanted to be involved in service, and I knew that I wanted to add an international dimension to honor who I am.” She began by joining a program that took her to Calnali, a rural town in the mountains of Central Mexico. “In the beginning, it was truly a service project. We went there, saw patients for a week, and then came back.” The project “evolved a life of its own,” Martínez Mier said. “We knew that to develop something sustainable, we had to partner with the community and the local health care providers. We had to find out what the community wants, so that we’re not the Americans who arrive and know it all, but who really serve their needs. We found a few other dentists in Calnali who worked for the health systems in Mexico. We invited them to join us, and then we invited the local state university, Universidad Autónoma del Estado de Hidalgo.”

Above: Calnali, on the eastern slopes of the Sierra Madre Oriental mountain range in central Mexico, was the first site for the community dental clinics assisted by the IU School of Dentistry.

Right: Martínez Mier and colleagues setting up the community clinics
The availability of drinking water varies throughout rural Mexico. Formulas for dental health need to be sensitive to local customs and conditions.

Service quickly became service learning. With advice from service learning experts at IUPUI, Martínez Mier developed a whole curriculum: "Our semester-long classes had learning objectives, expected student outcomes, pre-departure assignments, post-departure reports, and a full immersion experience during spring break or the summer so that students would have truly intentional learning."

With year-round programs in place, IU dentistry students took up questions that the community interactions raised. “They did research, published articles, and disseminated the findings with positive results for the communities. For example, they identified some of the risk factors for caries. They found out that people in the communities did not trust the water and were not using it for brushing, and that affected their teeth. They brought those results and suggestions to the town officials.”

The IU program took this model to other sites. “When we started a student and faculty exchange program with Hidalgo, the first dental student who came from the University of Hidalgo became a faculty member at the University of Yucatan. He wanted to follow the same model there, so we began collaborating with the University of Yucatan, found a few communities where the university had a presence, and talked to the elders of the community and the principals of the schools and had them decide which communities we would visit. The University of Yucatan opened dental programs in those communities. At one point, we have had similar programs in Mexico, Haiti, Guatemala, Ecuador, Brazil, Kenya, and Vietnam.”

Eventually, the region of the original program in Calnali became unsafe, and the IU program suspended sending students there, but the Calnali services and other partnerships have continued. “Dental pediatric residents continue to come here. We continue our commitment as consultants. We gave them the tools, and the communities around Calnali continue to be served.”

Recently, IU started a partnership with the National Institute of Public Health of Mexico, undertaking research into fluoride safety in Mexican children. “We are looking at their total fluoride intake. Because in many rural areas water is brought in by truck and taken home in buckets, fluoride is put in salt, which is more dependably available everywhere.” The best formula in the United States is not the best formula for Mexico.”

Through another of Martínez Mier’s initiatives, the Binational/Cross-Cultural Health Enhancement Center, IU is applying lessons learned in Mexican communities
to the Hispanic communities in Indiana. “For example, we have learned that Latin American immigrants in our Indiana communities do not trust tap water. Our experiences in Hidalgo tell us exactly why. If Indiana residents avoid tap water, then the U.S. formulas for total fluoride intake are skewed, and we need to address the residents’ special needs. We have to understand the health conditions in the communities where our residents come from in order to figure out what is going on here.”

Another application of this cross-cultural knowledge is a project being put into place by Diane Lorant, associate professor of clinical pediatrics and associate director of the Riley Hospital Neonatal Fellowship Program, and Juan Carlos Acosta, assistant professor of clinical pediatrics. “Drs. Lorant and Acosta noted that there was no mechanism at Riley to deal with the bereavement of a parent who lost a child if that parent did not speak English. If you were English-speaking and your child died, a whole system kicked in—counseling, support programs, free books. If you were Spanish-speaking, you got almost nothing. So we conducted focus groups and learned how bereavement is dealt with in the rural communities in Mexico where our immigrants originated. There are many cultural practices around death and healing. “We brought that information back to IUPUI, and Drs. Lorant and Acosta used the results to develop a survey to query Indianapolis Latino families about their needs for bereavement. One insight from the survey was the recognition of the importance of respeto (literally, respect)—the very particular relationship Mexicans have with death and the need to involve the entire family in making decisions. They shared the results with Riley, and the hospital modified its program.”

While conducting the Indianapolis survey, Lorant observed that language was a special barrier in the hospital setting. Martínez Mier explains, “Children can be in the hospital for long periods, and the parents told her ‘We’re here. Why don’t you teach us English?’ As a result, Dr. Lorant has received funding for classes to teach the basic English needed to deal with a sick child. This came from listening to the parents and listening to the community.”

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www.dentistry.iu.edu/index.php/faculty/martinez-mier-e-angeles

Binational/Cross-Cultural Health Enhancement Center  
www.dentistry.iu.edu/BICCHEC_Site

Division of Community Dentistry, School of Dentistry  

International Service Learning, School of Dentistry  
www.dentistry.iu.edu/isl_site/about/default.aspx

Calnali Health Education Outreach Program, Riley Hospital  
iuhealth.org/riley/for-health-professionals/outreach/riley-international-project/calnali-health-education