

Reflection

Beyond the Numbers: Lessons that continue to shape my journey

Dr. Rajni Verma, Ph.D

Assistant Professor & RSO, Department of Radiological Physics, SMS Medical College and Hospitals, India

Some journeys end when we return home. Others quietly continue, shaping the way we think, work, and see the world long after they are over. On 4 August 2019, I arrived in Germany to begin my research fellowship at the University Hospital Würzburg under the DAAD Fellowship. I could never have imagined then that, nearly six years later, I would still look back on that day with such gratitude. What began as an exciting opportunity soon became one of the most transformative journeys of my personal and professional life.

When I left Jaipur as a PhD student from the Department of Radiological Physics, SMS Medical College & Hospitals, my goal was straightforward to strengthen my research, learn advanced dosimetry techniques, and complete the experimental part of my PhD. What I did not anticipate was that those few months would reshape not only my research but also my perspective on science, learning, and life.

Although I had previously travelled to Europe for scientific conferences, living and working there as a research student was a completely different experience. Conferences offered brief academic interactions; the fellowship immersed me in a research culture where curiosity, collaboration, and responsibility were part of everyday life. Looking back, I realise it became far more than an academic opportunity—it was an education in science, independence, and personal growth.

Looking Beyond the Numbers



*University Hospital
Mannheim*

Like many young medical physicists, I once believed our profession was mainly about operating sophisticated equipment and understanding advanced technology. The fellowship taught me otherwise.

Working with Prof. Frank Hensley and his team, I learnt that every measurement carries uncertainty and every number represents a physical reality that deserves to be understood rather than simply accepted. Medical physicists are not merely users of technology; they question it, validate it, improve it, and sometimes even help create it.

What impressed me most was the culture of scientific discussion. Ideas were valued not because of who proposed them, but because they were supported by evidence. That environment encouraged me to ask "why" instead of simply following established methods. Rather than relying solely on software outputs, I learnt to

understand the physics behind them, think critically, and look for better solutions. It was a shift in mindset that has stayed with me ever since and continues to shape the way I teach my own students today.

Learning Independence

The fellowship taught me science, but perhaps its greatest lesson was independence.

Many of my experiments were carried out late at night in the brachytherapy room located in the hospital basement. Reaching it meant walking through long, silent corridors where motion-sensor lights switched on only as I passed. During my first week, it honestly felt like a scene from a horror movie. Before long, however, those quiet evenings became my favourite time to work. They taught me patience, self-reliance, and a lesson that has stayed with me ever since—confidence grows quietly, one small challenge at a time.



*Medical Physics Team at the University Hospital
Würzburg, Germany*

Another memorable lesson came from Patrick, a postdoctoral physicist, who noticed me spending hours analysing large datasets manually in Excel. Instead of watching me struggle, he wrote a simple Python program that completed the task in minutes. His only request in return was a small cake from a nearby bakery. That simple exchange grew into a lasting friendship and reminded me that good science is not always about working harder it is often about thinking smarter and helping one another.

I was equally inspired by Dr. Sonja Wegener. Her expertise in dosimetry was exceptional, but what impressed me most was her outlook on life. Outside the laboratory, she volunteered with the Würzburg Fire and Rescue Service. Watching her balance scientific excellence with community service challenged many of my own assumptions. She showed me that confidence comes from choosing your own path and staying true to your values a lesson that has influenced me both professionally and personally.

Learning Through Challenges

Living in a new country also meant learning to adapt. The language was unfamiliar, everyday conversations required extra effort, and even the computer keyboards had a different layout.

One incident from my first week still makes me smile. While trying to download a document, I accidentally printed the same file three times on the printer outside the Head of Department's office. I received a gentle but firm reminder about avoiding unnecessary printing and respecting environmental responsibility.

At the time, I instinctively missed the familiarity of home, where students often learn through such mistakes with a little more leniency. Over time, however, I came to appreciate a different perspective. Accountability was not criticism—it was part of a culture that valued

responsibility, respected resources, and expected everyone to contribute thoughtfully. It was a simple lesson, but one that stayed with me long after the embarrassment had faded

A Lasting Impact

Nearly six years have passed, yet I still reflect on those months with gratitude. The fellowship gave me far more than technical knowledge—it changed the way I think. I learnt to question before accepting, to analyse before concluding, and to understand the science behind every measurement rather than simply trusting the numbers on a screen. Today, whenever I teach treatment planning, quality assurance, or research methodology, I encourage my students to ask one simple question: **"Why?"** More often than not, meaningful learning begins there.

Just as importantly, I remember the people who made the experience so meaningful. I remain deeply grateful to Prof. Frank Hensley for his guidance and for helping me develop a deeper understanding of dosimetry, detector physics, and their clinical applications—knowledge that became an important foundation of my PhD research.



A memorable moment with the SCMPCR team, mentors, fellow students and medical physics colleagues at the University Hospital Mannheim, Germany.

My heartfelt thanks also go to Prof. Arun Chougule, Prof. Golam Abu Zakaria, Prof. Anupama Azhari, Prof. Otto Sauer, and the entire SCMPCR family. Through their vision and commitment, they have quietly created opportunities that have shaped the careers of many young medical physicists across South Asia. I feel privileged to have been one of those students and hope to carry forward the same spirit of mentorship in my own career.

Looking back, I realise the fellowship was never simply about completing a research project or working in another country. It was about learning to think independently, embracing challenges with confidence, and understanding that being a medical physicist means much more than operating sophisticated technology. We are scientists, problem solvers, and lifelong learners, with a responsibility to question, improve, and continually advance our field.



Today, when I stand beside my own students in the laboratory or encourage them to question a result instead of simply accepting it, I often realise that I am passing on lessons that were once shared with me. In many ways, that fellowship never truly ended—it continues through every student I teach and every opportunity I have to mentor the next generation.

My hope is that more young medical physicists will embrace opportunities that challenge them to step beyond their comfort zones. The true value of such experiences is measured not only by the experiments completed or the papers published, but by the confidence they build, the friendships they create, and the perspective they leave behind.

Some journeys last only a few months. Their lessons can last a lifetime.