

# Patient Safety and Nurse Fatigue:

## How can we move past it?

### Featuring:

**Mary Kaminski, NNP, DNP**  
**Amany Farag, PhD, RN**

### TRANSCRIPT

**Maura Bowen:** I have a story for you today, listeners. Actually, it isn't my story to tell. It belongs to my colleague, Mary Kaminski, who is Abbott Nutrition Health Institute's Pediatric Nutrition Education Manager. Now, Mary, is also a neonatal nurse practitioner at Nationwide Children's Hospital here in Columbus, Ohio. She's been in practice for 32 years, and she's on The Power of Nutrition Podcast today to share her story about how fatigue can affect nurses in their nursing practice. Mary, thanks for being here today.

**Mary Kaminski:** Thanks for having me, Maura.

**Maura Bowen:** All right. So, Mary, let's start from the beginning with your story.

**Mary Kaminski:** Okay. This story happened early in my career of nursing, and I was working, actually, in Philadelphia at the Children's Hospital of Philadelphia there. And while I was working the night shift, I was having trouble staying awake. So, after my shift finished, I ended up staying over to help the day shift get started. It was about 8:30, or 9:00 in the morning, and if any of you have ever been in Philadelphia, some of the roads are one way into the city in the morning, and one way out of the city at night.

So, I was on my way home forgetting that it was 8:00 in the morning, as opposed to being 8:00 at night. And I got to the place where I was supposed to turn on to the road to get to my home, and I'm stopped at a traffic light, and I actually fall asleep at the traffic light. It isn't until I hear someone behind me honk the horn, I realized that I'm headed down a one-way road, and I'm going the wrong way. I was able to quickly turn into a parking lot and get myself turned around and tried to head back towards where my apartment was.

**Maura Bowen:** Wow. So, what did you do when you got home? And were you able to get some rest? Or did you have some competing demands on top of that?

**Mary Kaminski:** So, when I got home, I was scared to death. I was lucky enough, because it was early in my career, and I was single at that point. So, I didn't have any competing demands like many other nurses have when they get home, and they have children to care for, or to get on the bus, or all those other things that might be happening. Elderly parents that they're taking care of, that kind of thing. So, I was very lucky in that respect, but I know there are many, many other people who can tell you the same type of stories about fatigue after working the night shift, or even the day shift, that it can really get to them.

**Maura Bowen:** So, it sounds like you've thought a lot about that incident since then. So, how did you feel when you had a chance to process what had happened? Did you have a chance to change any of your habits to make sure nothing like that ever happened again?

**Mary Kaminski:** So, some of the things that I did do was to try to make sure when I was working the night shift, that I would get a nap before I went in. However, some days I couldn't really even sleep in the afternoon. The other thing that I thought a lot about was changing my schedule so that I didn't work so many days in a row. Even though nurses have the advantage of working 12-hour shifts, sometimes doing so many of those in a row can make you very fatigued, especially on your last shift.

**Maura Bowen:** It really goes without saying, this is a story that speaks to a level of on-the-job pressure that some of us will fortunately never know. But it's the kind of scenario nurses see on a regular basis that you just have to weather, and that's exhausting. So, when you add to this the emotional toll and the challenges that come from those long hours, and staffing shortages, and budget constraints, it isn't an easy environment for professionals who need to be at their best so they can bring their best to their patients.

I'm Maura Bowen, podcasting for Abbott Nutrition Health Institute, and through the course of the COVID-19 pandemic, we've paid such lip service to the heroes on the front lines, and with sincere gratitude. But so much of the population doesn't have a critical understanding of that day-to-day challenge that healthcare professionals face around the world. And the toll that those challenges take, not just during this pandemic but also outside of it. So, Mary and I want to talk about that today, focusing specifically on nurse fatigue, and by that we mean fatigue of both the physical and the mental variety. And that's why we've invited Dr. Amany Farag, associate professor in the College of Nursing at the University of Iowa. Dr. Farag's most recent work focuses on nurse fatigue, fatigue management, and medication safety. She'll help us get a handle on this critical issue. So, Dr. Farag, thank you for joining us today.

**Dr. Farag:** Thank you, Maura and Mary, for having me with you today.

**Maura Bowen:** Wonderful. So, I would like to actually hand this dialogue over to Mary and Dr. Farag, because I think this topic will be more meaningful if you can hear it being discussed between two practitioners. First, I'll note that Mary and I are recording in studio here in Columbus, Ohio, and Dr. Farag is joining us by phone from the University of Iowa. So, you may notice some differences in recording tonality between our two locations. Ladies, I am looking forward to your discussion.

**Mary Kaminski:** Hello, Dr. Farag. Thanks for joining us today.

**Dr. Farag:** Thank you for having me with you today, Mary.

**Mary Kaminski:** So, before we begin, maybe you can tell us a little bit about yourself.

**Dr. Farag:** Sure. My name is Amany Farag. I'm an associate professor at the University of Iowa College of Nursing. I started my position in 2012. I am a health systems researcher, my work is around the hospital system and how to make the hospital system better. And my research focuses mainly on medication safety and how to make the medication administration practices safe across the care continuum. I am investigating both human and system factors contributing to medication safety. In addition to my job as a faculty, up until May of 2020 I used also to work as a sexual assault nurse examiner. I used to be on call during the weekends. I am a mother of two boys and both of them are soccer players. So, if I'm not on call, I am somewhere in Iowa enjoying a soccer tournament.

**Mary Kaminski:** It's great to hear how you have integrated what you do and what you love into your life. I am wondering if you could tell us how you really became interested in medication safety, and how that relates to our topic here today of nurse fatigue?

**Dr. Farag:** Sure. As I mentioned earlier, I'm a health systems researcher, health system research is so big. So, I narrowed it down to quality and safety, which is still a big area of research, knowledge and discovery. As I was working and trying to find my niche, I started to read about the Institute of Medicine Report, To Err Is Human. This report magnified the problem of medication errors across hospitals in the United States. And at this time it was ranked as the eighth leading cause of death in the United States. So, I thought this is an important topic to start my discovery, and that is why I decided to start on medication safety.

Regarding fatigue, as I was working on medication safety, and trying to define my area of research, I developed two relating, or intertwined lines of research. The first line is a reactive approach to error, which means that how I can increase the nurse's willingness to report medication error. So, if they have an error, they can complete an incident report so the hospitals can learn from the error to error-proof the system to mitigate the medication error from happening again, which is the organizational learning component. The

other line of research is being more proactive. And that is where I ended up studying fatigue because fatigue is one of the possible factors that can contribute to medication errors.

**Mary Kaminski:** So, medication safety certainly has been a focus ever since To Err Is Human came out. I really think that from a hospital safety standpoint, it is very, very important as we try to get to that point where our patients can expect things are error-free. It's always been something that I've been interested in, so it's great to hear that there's some research going on and looking at how nurse fatigue can be a part of medication safety.

**Dr. Farag:** A lot of the work in the Institute of Medicine Report focused on adding technology and alarms, and now we have alarm fatigue, and the triggers within the system. So, we have electronic health records. We have electronic medication administration records, et cetera. For me, I focus on the human factor. So, we complete our two equal parts of the equation. You have to error-proof the system, but within the same time, you have to pay attention to the humans, and the people who operate and administer the medication. So, that's why I investigate nurse fatigue.

**Mary Kaminski:** It is interesting to look at the human factor piece of it, because you are right, technology really has taken off. However, we haven't really conquered the human factor piece of it. And certainly nurse fatigue fits into that very well. So, so much of the fatigue that we face as nurses actually comes, in part, from the 12-hour, and the rotating shifts, the nursing shortage, which really has been highlighted over the last year with COVID and the pandemic, the financial constraints and all those other things. What other challenges can you think of that contribute to the problem? And how and why have these factors become such a normal part of our working life as a healthcare provider?

**Dr. Farag:** ...all these are organizational factors. Other factors that can contribute to nurse fatigue, and you tapped into it in your introduction, is the personal factor. Of course, the commute time is one factor. Having a lot of children, increased number of children, especially younger children who needs a lot of care and attention. And sometimes they cause disruption in sleep. Which leads me to sleep, a very strong [ ] factor that I found to be correlated with fatigue. Lack of sleep is a major factor. .

Another major factor relates to the system, which is the culture in our healthcare system. A lot of hospitals do not allow nurses to take naps, or to take some break during their shift work. I know some hospitals have started to facilitate this and allow nurses to take naps, especially during the night shift. But not all the hospitals all across the United States started to do that. The other is our culture as nurses. We, as nurses, are not comfortable to leave our patients and to go to the break room to sit, or to close our eyes for some minutes. A lot of the nurses shared with me that they felt that if they're going to leave their patient to one of their colleagues, they are adding burden to their colleagues.

**Mary Kaminski:** I think you're definitely right about the culture. I know at our hospital, at Nationwide Children's, we've started letting nurses who are working the night shift take a short nap if they would like to. However, getting the nurses to go and actually participate in a nap can be very difficult. So, how do we make nurses feel more comfortable about taking a break?

**Dr. Farag:** One thought is if we added... Every day we have the daily assignments, and we have the tasks that should be done throughout the shift. One thought, and this has not been empirically tested yet, and it is one on my to-do list, is to integrate that break time as part of the task or activities. So, this will require for the hospital nurses and administration to study the work schedules and try to figure out where it could be a good point to integrate and tailor the mini breaks. So, nurses can go take mini breaks throughout their shifts. And if they see it in their daily assignments as part of their tasks. So, now we are changing the culture. That now it's a mandatory task. In my study, one of the units, the nurse manager for this particular unit has this scheduled in their daily assignments, which I was so happy to see something like that.

The other suggestion is to start early on, while nurses are in their undergraduate education to teach them about the wellness and wellness practices. And how is this important for them to take care of themselves first, to be able to take care of their patients.

**Mary Kaminski:** So, let's talk a little bit now about your work. It looks like you interviewed several nurses. Maybe you can share with us some of the stories that they actually shared with you while you were interviewing them?

**Dr. Farag:** One nurse shared with me that some days she recalls leaving the hospital and she cannot recall anything between leaving the hospital and making it to home. So, that means that there's a gap in her memory how she drove between the hospital to her house. Another one shared with me that some of her colleagues go off the shoulder --on the highway--to close their eyes, to be able to make it home safely. Another nurse shared with me that one day she made it to her home, and she slept in the car because she was so tired. I can go on, and on, and on.

**Mary Kaminski:** Wow. And if I ask any of my nurse friends, they all have a story very similar to that. So, tell me a little bit more about your study sample. How did you identify people who would participate in that? Did you encounter any difficulties recruiting any participants?

**Dr. Farag:** I recruited nurses from eight sites. The eight hospitals located in a 120-mile radius from the university. The hospital included one academic medical center, and six mid-sized community hospitals, and two critical-access hospitals. So, first I approached the chief nursing officers and the nursing manager. I obtained the IRB approval which is the human subjects' approval, and all the managers and the chief nursing officers were on board, because they felt that this is a very important topic. After I received the approval, I went to their weekly or monthly staff meeting. I introduced the study. And then, after I finished my introduction, I distributed the study surveys. So, I cannot say that I faced any obstacles.

**Mary Kaminski:** You had a great response rate of 56%. Can you tell us a bit about your method? I read in your article that it consisted of three different phases. Maybe you can briefly describe each one?

**Dr. Farag:** I included nurses working in all the different units in all the hospitals. After I introduced the study, I distributed the study survey in the nurse's mail boxes. And to improve the response rate, I distributed a reminder flyer once weekly over a three-week period. And this is a scientific method, it's called the billiard technique for survey. Along with the study survey, I invited the nurses to participate in the second phase of the study that involved text messaging to evaluate their fatigue level. Nurses who agreed to participate, shared with me their phone number and a good time to contact them. At an agreed upon date and time, I called the nurses and I enrolled them in testing platform that was designed specifically for the studies. I monitored the nurses over a 14-day period, including work and non-workdays. So, each nurse received four texts asking them to add their fatigue level in a score from zero to 10. Zero, not fatigued, and 10 extremely fatigued. And you just punch a number indicating the level of the fatigue. And they received this text four times a day, over a 14-day period.

During their workday, in addition to the fatigue question, they receive two text messages asking them if they had a medication error or near miss. And that was yes, no question. And then, they just texted. That was it.

I randomly invited nurses to participate in the qualitative interview, which is a third stage of the study. And in that field, I interviewed nurses to ask them about the fatigue management strategies they use during their off day, as well as when they are working. So, I distributed 2,026 surveys. I received 1,137 surveys back. Out of the those, maybe 1,000 something agreed to participate in the text messaging. But by the time I was able to call them back and enroll them I enrolled 675 participants, and 44 participants included in the last phase, which is a qualitative interview.

**Mary Kaminski:** Wow. That's fantastic. So, thinking about your results, what did you discover from these? And was there anything in those findings that actually surprised you in any way?

**Dr. Farag:** In the end... What I found was that sleep, exercise, and caffeine consumption are important personal factors that can help nurses to manage their fatigue. From the work factor perspective, I was surprised that I... And I was glad that I included some of the work environment variables. Staffing, and resource adequacy, leadership support, and nurse-physician relationships were important variables related to nurse fatigue. So, these variables had not been examined before. So, I'm so glad that I included them. And they were significant.

One surprising finding was that day shift nurses were more fatigued than night shift nurses. The other thing from the qualitative interviews, I didn't find that nurses who reported that they are high fatigued use different fatigue mitigation measures than nurses who were rested. So, my assumption when I went to the qualitative interviews, I thought that nurses who reported lower fatigue level they would use more fatigue management, or mitigation measures, then nurses who were high fatigued. But I didn't find any differences between the two groups in their fatigue mitigation measures they used during work. So, it needs further exploration.

And, of course, female nurses were more fatigued than male nurses. However, I didn't have a large number of male nurses to start with include in my study. but still their quantitative interviews, the few male nurses shared with me that during their off days, they can go home, and they go to sleep. They do not have to care about anything. And their wife makes sure that the house is quiet and everything. But the female nurses in the interviews, they go home to start to do some house chore, deliver kids to school, and do some work before going to sleep.

**Mary Kaminski:** So, I know that you mentioned earlier that one of your drivers to study nurse fatigue was actually related to human factors and medication safety. What can you share with us how your study informs us about this topic?

**Dr. Farag:** Before my studies, there is an earlier study done by Ann Rogers and Linda Scott, and I believe it was dated to 2000. And they found the relationship between some of the medication errors and nurse fatigue. I couldn't find a lot of evidence between them until I did my study. And I started in 2017. That is why I included in both the survey and the text messaging question, if they had medication error or a near miss. And I found a significant relationship between nurse fatigue and medication errors and a near miss. But, again, I would like to enter to this with caution, because if you remember early on, I said for the error to happen, there are some system factors, and there are some human factors. So, the fatigue is one of the contributing factors to the error. So, just, I do not want to blame the nurses and their fatigue to be the main driver for all the errors.

**Mary Kaminski:** What do you think are some other strategies, and what are some of the barriers for making health and wellness maybe a stronger priority?

**Dr. Farag:** It requires some investigation is which centered around how we change the behavior, how we make healthcare providers and nurses, especially, pay more close attention to their wellness. How to take better care of their sleep hygiene, of their exercise, and nutrition. Because nutrition also very, very important factor, like eating a lot of starchy and high carb diet it also gives them a boost of energy, then they crash, and the feel more fatigue.

One approach is with the advancements in wearable devices and wearable technology. Now we can track their steps and their activities. And they can also track their sleep, and the length of their sleep. So, according to the National Sleep Foundation, adults require from eight to nine hours of sleep. So, this is the benchmark that they have to be aiming at. Training and starting the education early on in the undergraduate and having some measures within the organization to enforce the wellness, I believe this will help them to integrate wellness as part of their daily rituals and practices.

**Mary Kaminski:** I think this is great. And especially hearing you say some things about how technology is playing a role nowadays in helping nurses to figure out a little more about their own health and their wellness. What additional studies do you think are needed to help advance this science?

**Dr. Farag:** So far, and this is part of the work that I'm starting to study, what type of intervention. Because, now the funding agencies, and the hospitals, and everywhere, they said, "Yes. Now we know our healthcare workers and frontline nurses are fatigued and tired. So, what kind of intervention that can be done to make us take care of our patients and their safety, as well as our nurses." So, the direction is the intervention studies using the technology and the wearable devices to see the effects of the intervention on nurses sleep and alertness.

The other thing which came across as I was collecting data for another study, I noticed that my other study involved wearables and monitor nurses' sleep over a six-week cycle. The nurses started to form a community. And as I was collecting the wearables back, they start to talk with me how they had a friendly competition, which started the idea about how we do the gamification to produce some behavior change toward wellness.

**Mary Kaminski:** Those all sound like they could be some great interventions that could be done to get nurses to put health and wellness as more of a priority.



**Maura Bowen:** Well, Mary Kaminski, and Dr. Amany Farag, I wanted to thank you both for joining the podcast today. I know clearly, you're both so busy, so it was especially gracious of you to spend some time addressing such an important issue in your profession today. Thank you for being here.

**Dr. Farag:** Thank you.

**Mary Kaminski:** Thanks so much, Maura.

**Maura Bowen:** And for our listeners, if you're looking for more Power of Nutrition Podcast episodes, we have dozens and dozens across a variety of nutrition science topics. And you can find them on ANHI.org by clicking resources at the top of the page, and then podcasts and videos. We're also on Spotify now. So, be sure to follow The Power of Nutrition Podcast, to hear the latest nutrition science news. And share us with your colleagues. Thanks everyone. And please take care of yourselves.