Fighting the Deadly Three: Heart Disease, Hypertension, and Diabetes

by Archana Pyati
Minority Nurse Writer

Rosemarie Jeanpierre remembers the cruel comments as if she heard them yesterday. She was riding a crowded bus to work in Los Angeles when a perfect stranger got on and said, "move over, fatso," as they all jostled for more standing room. Feeling ashamed, she wanted to get off the bus immediately, but kept riding, all the way to her job as a treatment nurse at Western Convalescent Hospital.

At the time, Jeanpierre weighed 220 pounds, and at 5'2", she was considered obese. In 2003, her doctor told her she had pre-diabetes, a condition of elevated blood sugar and a harbinger for a diabetes diagnosis down the road. She had been overweight her whole life. As a girl in the Philippines, she learned the habit of overeating for emotional comfort. She had the classic symptoms: her blood sugar was "out of control," yet she felt hungry all the time. She felt short of breath, propping up pillows at night to breathe while sleeping. And her co-workers told her she looked stressed.

"My doctor got upset with me," Jeanpierre, L.V.N., recalls. "She said, 'You're only 39 and you're a nurse!'" Being scolded by her physician was upsetting, but not nearly as traumatic as dealing with her father's death of a massive heart attack a few years before. He had been a diabetic and suffered from high cholesterol and high blood pressure as well.,

"That gave me a big realization that I needed to do something about my health," Jeanpierre says. "I said to myself, 'I'm a nurse, and I want to set a good example for my patients.'"

In a dramatic reversal of fate, Jeanpierre lost half her body weight in 18 months through a disciplined regimen of exercise and dietary changes. She forced herself to reduce her daily caloric intake from 6,000 to 1,800. The trips to McDonald's and a local bakery stopped. What began with 45-minute walks on the treadmill gradually morphed into an abiding passion for running. Jeanpierre ran her first marathon in 2005 at the urging of her nephew. Now, she routinely wins shorter distance races in her age division and plans to run the Nanny Goat 100-mile race this year.

Jeanpierre's story is exceptional, yet could have turned out much differently if she hadn't found the willpower to change her behavior. Diabetes, heart disease, and hypertension are chronic diseases and are among the leading causes of death in all populations, but more acutely strike minority groups: African Americans, Latinos, Native Americans, and certain Asian ethnicities. They also happen to be diseases where behavioral changes can reverse—or at least mitigate— their impact.

Nurses possess greater knowledge of these illnesses than the average person, but are no exception. In addition, researchers have recently discovered nurses may be particularly vulnerable to developing key risk factors.

Diabetes: bad for our blood vessels

If not properly managed, diabetes sets the stage for poor heart health. Grim statistics prove cardiovascular disease is the leading cause of death among people with diabetes. Two out of three people with diabetes die of heart disease or stroke; a middle-aged person with type 2 diabetes has as much of a chance of having a heart attack as someone without diabetes who has already had one heart attack, according to the National Institute of Diabetes and Digestive and Kidney Diseases.

"Diabetes is a risk factor for cardiovascular disease, and any diabetes education program must include information about heart disease," says Cristina Rabadán-Diehl, Ph.D., M.P.H., Deputy Director of the Office of Global Health at the National Heart, Lung, and Blood Institute.

In fact, researchers have come up with a special name for the cluster of traits that make a person prone to both diabetes and heart disease: metabolic syndrome, meaning he or she has three out of the following five conditions.

1. Excessive abdominal fat
2. High levels of triglycerides
3. Low amounts of HDL, or "good," cholesterol
4. Hypertension
5. Fasting blood sugar level of 100 milligrams per deciliter

So how exactly does diabetes compromise cardiovascular health? By adding stress to our circulatory system, which carries blood and oxygen to vital organs and tissues.

In type 2 diabetes, cells become resistant to insulin, the hormone needed to extract sugar from the blood and metabolize it into energy. Having excess sugar, or glucose, in the blood contributes to the deterioration of blood vessels, but researchers have yet to pin down glucose's specific role in this process.

"Glucose exacerbates the action of other risk factors, [and] the process of atherosclerosis gets accelerated," says Rabadán-Diehl. Atherosclerosis is the process by which arteries become clogged and hardened by plaque, a waxy substance made of cholesterol, fat, calcium, and cellular waste, thereby narrowing the channel through which blood can flow.

According to Rabadán-Diehl, excess blood sugar could also "stimulate the production of fatty acids, and makes plaque a bit vulnerable." By producing fatty acids, glucose potentially destabilizes pieces of plaque, moving them through our arteries to potentially form blood clots.

"Glucose likely contributes to the formation of plaque and might also contribute to the instability of plaque, causing particles to drift," she says.

The narrowing and blockage of blood vessels is the root cause of all major cardiovascular problems, from stroke (caused by blockage of arteries leading to the brain) to coronary heart disease (blockage of arteries leading to the heart) to peripheral arterial disease (blockage of arteries leading to the legs). In addition, more pressure is felt by the arterial walls because of the constricted space through which blood can flow, giving rise to hypertension.

Why nurses are vulnerable

Nurses shoulder a unique burden among health care providers. Not only are they the primary caregivers and conveyers of health information to their patients, but they are often expected to be role models of healthy behaviors. Among nurses who care for diabetic or cardiac patients, the burden is greater since risks for both can be mitigated by behavioral changes like weight loss, dietary modifications, and exercise.

Sally K. Miller, Ph.D., F.N.P.-B.C., and clinical professor of nursing at Drexel University, has studied obesity rates among nurses and their ability to provide weight management counseling to their patients. She links a nurse's own health status to her credibility among those in her care: "'Do as I say and not as I do' is not very effective. People in general put more weight on advice from someone who is modeling that behavior and has been successful in that behavior."

Yet how easy is it for nurses to maintain a healthy weight and avoid chronic metabolic disorders? Not terribly, according to two studies published last year.

At the University of Maryland School of Nursing, postdoctoral fellow Kihye Han, Ph.D., R.N., and professor Alison M. Trinkoff, Sc.D., M.P., B.S.N., R.N., F.A.A.N., found that nurses who worked long shifts were more likely to be obese than underweight or at a normal weight. Their results, published in the

November 2011 issue of *Journal of Nursing Administration*, show that among the 2,103 female nurses surveyed, 55% were obese and reported less physical exertion and movement in their jobs.

"Long hours affect circadian rhythms," Han and Trinkoff wrote in an e-mail interview. "Disrupted day/night cycles have detrimental effects on sleep quality and quantity, which are important independent risk factors for obesity, more important than even physical inactivity and high fat intake."

Han and Trinkoff conclude that nurses who work long shifts might not have the time and energy to participate in regular exercise and that sleep deprivation also stimulates the appetite, forcing nurses to snack during shifts when healthy food choices might not be available.

Nutrition researcher An Pan, Ph.D., goes a step further by solidifying the connection between nurse's shift work, obesity, and a dispensation towards type 2 diabetes in a study published in the December 2011 issue of PLoS *(Public Library of Science) Medicine*.

Pan and his colleagues at the Harvard School of Public Health analyzed responses from 177,184 nurses surveyed over a span of two decades. They discovered that a nurse's risk of developing type 2 diabetes grew in direct proportion to the number of years she worked night shifts. A nurse working night shifts for three to nine years had a 20% chance of becoming diabetic, while that risk jumped to 58% if a nurse worked night shifts for over 20 years.

Weight gain became inevitable after years of working nights, says Pan in an interview: "Women who worked rotating night shifts gained more weight and were more likely to become obese during the follow-up."

Nurses also say they have a tendency to turn a deaf ear to warnings about their own health, opting to take care of everyone else—patients, spouses, children—first. Eva Gómez, M.S.N., R.N., C.P.N., and a staff development specialist at Children's Hospital in Boston, waited 13 years before following up on a diagnosis of a heart murmur she received in her 20s. In 2010, she found out she had a misshapen aortic valve, causing her aorta to bulge with backed-up blood. She scheduled valve replacement surgery for later that year and says if she had waited any longer, her aorta could have burst.

"At one point, I said, 'That cannot be me; that's something that happens to patients. I take care of people who have this,'" says Gómez, a national spokeswoman for the American Heart Association's *Go Red Por Tu Corazón* campaign. "It never occurs to you that it could happen to me."

Why certain races and ethnicities are at risk

Nurses face serious occupational challenges when it comes to managing their weight and stress level, and those who belong to certain racial and ethnic groups face even steeper barriers.

Latinos, African Americans, and Native Americans are at particular risk for becoming diabetic, while cardiovascular disease remains the #1 killer of all populations, despite race. While genes play a role that

researchers are only beginning to understand, lifestyle, socioeconomic, and environmental factors have been the focus of most public health campaigns.

Relying on staples like rice, beans, and bread products and cooking techniques like deep frying, many Latin American cultures eat "diets that are richer in carbs and fats," says Maria Koen, F.N.P., C.D.E., a bilingual nurse practitioner and diabetes educator at the Joslin Diabetes Latino Initiative in Boston. In addition, "they're not necessarily having regular exercise as part of their lifestyle [or] making it a priority."

Getting patients to eat more fruits and non-starchy vegetables remains a challenge, and fast food is perceived as a reward in certain communities. "Going to a fast food restaurant is considered to be aspirational; it's a treat" among Latinos, says Marleny Ramirez-Wood, Communication Manager of the AHA's *Go Red Por Tu Corazón* campaign. "We want to focus our message...in terms of cooking traditional meals, how they can make them healthier, [and] how they can incorporate physical activity into what they're doing."

For many ethnic groups, questions about access and affordability arise in conversations about eating healthier, since the corner markets in their neighborhoods may offer nothing more than liquor, cigarettes, and lottery tickets.

"Access to fresh fruits and vegetables is not available in certain communities we're talking about," says Lurelean B. Gaines, R.N., M.S.N., Chair of the Department of Nursing at East Los Angeles College and President-elect, Health Care & Education, of the American Diabetes Association. "If it's not there and you don't have the means, and with gas prices what they are, you're not going to drive out of your community to get better food."

A diabetes educator at the Mattapan Community Health clinic in Boston, Sharon Jackson counsels Haitian immigrants and African Americans from the neighborhood, many of whom work multiple jobs, have no time for exercise, and struggle to manage their disease.

"There isn't a two-hour stretch where a person who is conscientious isn't trying to take care of their diabetes," says Jackson, M.S., R.D., C.D.E., a clinical research program manager at the Joslin Diabetes Center. "Taking care of diabetes is a full-time task...[it] becomes a luxury when you're in a lower socioeconomic level."

Managing the deadly three

A nurse's hectic schedule is often beyond his or her control, especially early on in the career. Scarfing down meals on the go, never getting a decent night's sleep, working crazy hours to make ends meet, and juggling the demands of work and family life is the norm for many.

These habits take their toll, yet are not simply a matter of individual nurses making bad choices. Institutions play their part in either discouraging or promoting a culture of health for nurses.

One hospital is taking an aggressive approach in helping nurses and other hospital staff get control over chronic diseases like diabetes, heart disease, and hypertension. For the past decade, the Cleveland Clinic has offered its staff disease management programs as part of its employee health plan. Employees are assigned case managers who help them set and reach specific goals related to their condition, says Patricia Zirm, B.S.N., R.N., M.P.H., Senior Director of Employee Health Plans at the clinic.

The clinic is known for its culture of wellness, with nine different fitness areas scattered among its 12 hospitals, reimbursement of gym memberships, a ban on regular soda in vending machines, and healthy food choices in its cafeterias.

Of more than 30,000 employees enrolled in the health plan, approximately 18,000 have one of the diagnoses for which the clinic has a disease management program, and roughly 8,000 are already enrolled in a disease management program.

In 2010, the clinic started to incentivize employee health through a program called Healthy Choice, which ties participation in one of six disease management programs to lower monthly premiums. The six programs are focused on diseases, including diabetes and hypertension, where behavioral changes in diet and exercise deliver a huge impact.

Healthy Choice is a three-tiered system of insurance premiums where the highest level of discount (gold) is awarded to employees who are complying with their disease management goals. In the case of a diabetic, one goal is to maintain a blood sugar level of less than 7%. The silver rate is for employees participating in disease management, but aren't completely meeting their goals; the bronze rate is the standard rate, where an employee is insured but not enrolled in disease management.

Attaching health outcomes to an employee's paycheck seems to be a smart strategy. Since 2010, Healthy Choice participation among the staff has tripled. Over the past year, 17% of clinic employees went from the standard rate to the gold rate, and employees are making fewer trips to the ER and are being admitted less frequently to inpatient care, says Zirm. These are all signs of progress, yet work remains to be done.

"Anybody who is doing shift work is more prone to stress, diabetes, and heart disease," says Zirm. "The clinic tries to do a [favor] of addressing these issues related to shift work...we're trying to remove barriers, but the fact remai

Key Statistics **18.8 million people** have been diagnosed with diabetes.

A 2007–2009 survey showed among people 20 years or older, **7.1% of whites**, **8.4% of Asian Americans**, **11.8% of Hispanics/Latinos**, and **12.6% of African Americans/blacks** were diagnosed with diabetes.*

Compared to whites, the risk for a diabetes diagnosis was **18% higher for Asian Americans**, **66% higher for Hispanics/Latinos**, and **77% higher for African Americans/blacks**.*

Among Latinos, **Mexican Americans** and **Puerto Ricans** run the highest risk of developing diabetes.*

26.7% of African American women are overweight, and another **51% of African American women** are obese; **64% of African American women** are sedentary and get no leisure time for exercise.**

Latina women suffer from heart disease 10 years earlier than other ethnic groups. ***

Sources * National Diabetes Fact Sheet 2011, published by the Centers for Disease Control and the U.S. Department of Health and Human Services ** The National Coalition for Women and Heart Disease *** Interview with Marleny Ramirez-Wood, communications manager, *Go Red Por Tu Corazón*, American Heart Association