Midnight shift and health risks: New study tells sobering truths

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Officers who predominately work midnights are at greater risk of developing severe health problems than civilians and other cops, especially if they average more than about 90 minutes of overtime per week and have trouble sleeping.

This is established in a new study by an 8-member team of health experts, headed by **Dr. John Violanti**, a former state trooper and now a research associate professor at the State University of New York-Buffalo.

In an ongoing series of groundbreaking investigations, Violanti and cohorts have previously explored shift work and its relationship to suicidal thoughts and to problems of sleep quality. In one earlier study, they found that retired LEOs in general tend to die some 6 years sooner than other retired civic workers.

"The newest findings confirm one more way that policing endangers those who serve," says **Dr. Bill Lewinski**, executive director of the Force Science Research Center, which was not involved in the team's discoveries.

"Inescapably, some officers are forced to work undesirable hours, due to the 'round-the-clock nature of law enforcement. Now, knowing their special risks, it becomes all the more important for those on late shifts to rally their personal defenses against the potential assaults on their well-being."

Violanti agrees. "This is the first time that working officers have been examined from this particular perspective," he told *Force Science News*. "We hope these findings create an awareness of the importance of health education for police. Shift work is not going away. Officers need to learn how to adjust to it and come out alive."

The researchers' test group consisted of 61 male and 37 female volunteers randomly chosen from an eastern city with more than 900 sworn officers. Blood samples, blood pressure readings, and other pertinent data were collected from them at a medical clinic, and their shift assignments and overtime hours were confirmed from payroll records.

Day shift assignments were considered to be those that started between 4 AM and 11:59 AM; afternoon, starting between noon and 7:59 PM; and midnights beginning between 8 PM and 3:59 AM. The officers, who all worked 10-hour shifts, were categorized according to which shift they most often worked during the 5-year period preceding the study.

As a measurement of the officers' health risks, the researchers screened them for abdominal obesity (more than a 40.2-in. waistline in men, 34.6 inches in women); elevated triglycerides (above 150); reduced HDL ("good") cholesterol (less than 40 for men, less than 50 for women); glucose intolerance; and hypertension (blood pressure higher than 130/85).

A combination of any three of these "abnormalities" is said to constitute "metabolic syndrome," a condition that carries an increased risk of such health perils as stroke, cardiovascular disease, and Type 2 diabetes.

"In most individual categories, officers in the midnight-shift classification ranked the worst," one of the researchers, **Dr. Bryan Vila**, a member of the CJ faculty at Washington State University in Spokane, told FSN.

For example, 55% on midnights showed "elevated waist circumference," more than double the percentage found in the other 2 shifts. Half had sub-desirable levels of "good" cholesterol, compared to 30% on days and 44% on afternoons, and 25% had high blood pressure, compared to 15% on days and 9% on afternoons. (Figures are rounded here to avoid fractions.)

In measurement of triglycerides and glucose intolerance, midnight officers fared slightly better than their afternoon counterparts, but in no category were late-shift officers found to be in better shape than officers working days.

Over all, 30% of midnight officers had metabolic syndrome, versus 11% on days and about 15% on afternoon shifts.

"This is a very significant finding for a couple of reasons," Vila says. "First of all, studies of the general population have found that about 22% exhibit metabolic syndrome, and that includes sick people, old people, and others who might be expected to have a negative impact on the number. Cops at least have been screened for good overall physical and mental health when they joined the force.

"Besides that, officers in our study who worked midnights tended to be younger than those working days by an average of six years. You would expect younger officers to be less susceptible to the risk factors for serious diseases."

Midnight officers took additional hits when sleep and overtime were factored into the study.

The researchers report: "Officers who worked midnight shifts and [averaged] less than six hours sleep had a significantly higher mean number of metabolic syndrome components" than those who worked day and afternoon shifts. Indeed, their mean number of risk factors was more than four times that of day officers and more than 2 1/2 times that of those working afternoons.

Overtime, too, seems to impact midnight officers more negatively than those on other shifts. Among officers averaging more than 1.7 hours of overtime per week, those working midnights had a "significantly higher" mean number of metabolic syndrome factors—more than four times higher than day officers and more than twice the number for afternoon shifters.

The study notes in brief: "[S]horter sleep duration and more overtime combined with midnight shift work may be important contributors to the metabolic syndrome."

The researchers did not attempt to document the specific causes of the link between midnights and health dangers, but Violanti and Vila offer observations about a couple of likely suspects: eating habits and sleep patterns.

On late shifts, officers may feel more dependent on restaurants and vending machines that "point them more toward candy, Cokes, coffee, donuts, and fast foods than toward nutritious meals," Vila explains. In short, Violanti notes, "Diet on the night shift basically stinks."

Plus, he says, "Endocrine function and body balance are disturbed by circadian [daily rhythm] disruption. Working nights, especially on a job that's highly stressful, can cause significant wear and tear on the body."

"Sleep times for officers on midnights tend to be outside the normal range," Vila explains, "so they customarily get not only less sleep but sleep of lesser quality." This produces fatigue and sets up a vicious cycle. Insufficient sleep causes hormonal changes that, in effect, make the body crave quick energy bursts. "This triggers an appetite for the kind of foods that result in weight gain, bad cholesterol, and strain on the organs that help you metabolize sugars. In turn, being overweight makes you more susceptible to sleep apnea and other problems that interfere with restorative sleep."

If midnight officers want assurance of nutritious meals while working, they can pack their own, making sure what they eat is low in processed sugar and high in complex carbohydrates, he suggests.

"You'll sleep better," he says, "if you end vigorous physical activity two or more hours before you want to sleep. Minimize your caffeine consumption the last four hours of your shift, because it takes about six hours to diminish caffeine in the blood to a level where it won't interfere with sleep. And don't eat a big meal just before bedtime." Darkening the room when you have to sleep during daylight hours also helps.

"Make an agreement with your family that sleep for you is an important priority," Violanti suggests, so they can help minimize disturbances.

If you have persistent sleep problems, arrange to be screened for sleep disorders. "More than 40% of cops have serious sleep disorders, and these can usually be treated," Vila says. On the website of the nonprofit National Sleep Foundation [www.sleepfoundation.org] you can locate a sleep professional near you, as well as access helpful tips on better sleeping, books on the subject, and sleep aids.

Lewinski notes that the National Institutes of Health recommend the following for preventing or managing metabolic syndrome:

- Eating a diet low in fat, with a variety of fruits, vegetables, and whole-grain products
- Getting at least 30 minutes of moderate exercise almost every day
- Losing weight so that your body mass index is less than 25
- Controlling blood pressure and blood sugar
- Not smoking
- Including fish, preferably oily fish, in your diet at least twice a week.

Violanti would like to see law enforcement agencies provide training on diet and sleep, but he points out that "in the end, we are responsible for our own health. We can't depend on an organization to take care of us. Taking our own simple steps to improve lifestyle—eating better, sleeping better, exercising—is the best way to deal with this problem."

With the new metabolic study serving as a baseline, Violanti and his team are planning longer-term monitoring of 460 officers to see if continued exposure to midnight service makes results worse and, hopefully, to pinpoint specific causes of related health problems.

Meanwhile, Vila says, more than a dozen research papers are in development as a part of Violanti's broad-based studies. "We are trying to look one piece at a time at why police work is such an unhealthy profession and what can be done about that."

As more becomes known, *Force Science News* will keep you updated.

Meanwhile, our strategic partner PoliceOne.com this week posted a news article you may find interesting, concerning a Maryland officer who is suing his county for compensation for heart problems that he claims arose because of his police service.

According to this report, "Maryland law presumes that if public safety officials develop heart diseases, then it was their jobs that caused it and the officials should be eligible for worker's compensation claims, regardless of other possible contributing factors like obesity, smoking habits, and family medical history."

Go online to: www.policeone.com/health-fitness/articles/1979197-Md-cop-says-being-an-officer-gave-him-heart-problems/ to check it out.

A full report on the newest study, "Atypical Work Hours and Metabolic Syndrome Among Police Officers," appears in the journal Archives of Environmental & Occupational Health, vol. 64, #3, 2009 and is available online for a fee at: www.heldref.org/pubs/aeoh/about.html.

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