NDSU study looks at risk of heart disease in babies born to malnourished mothers

FARGO – Human fetuses carried by malnourished mothers face higher risks for heart disease.

By: Craig McEwen, INFORUM

FARGO – Human fetuses carried by malnourished mothers face higher risks for heart disease. That's the finding of research conducted at North Dakota State University and recently published in the American Journal of Physiology.

“One in five pregnancies are nutritionally at risk in the U.S.,” said NDSU professor Larry Reynolds, one of 11 campus students and staff who conducted the research.

“Low birth-weight babies (caused by maternal under-nutrition during pregnancy) have an increased risk of cardiovascular diseases later in life,” said Praveen Shukla, a 2012 NDSU doctoral graduate.

The research studied two groups of pregnant sheep: one consuming a normal diet, the other receiving 60 percent of daily calorie requirements. Fetal coronary arteries collected from the malnourished group showed increased susceptibility to cardiovascular diseases later in life, said Shukla, now a post-doctoral fellow at Stanford University School of Medicine in California.

The coronary artery is the major artery supplying blood to the heart.

“We think the problems are probably set up during pregnancy due to poor nutrition,” Reynolds said. “This study shows the basis for those problems.”

The consequences of poor nutrition, such as diabetes, cognitive dysfunction and a host of other diseases, are lifelong, he said.

“They now count for 60 percent of all deaths in the world,” Reynolds said. “It’s a big deal.”

NDSU’s findings illustrate how malnutrition during pregnancy affects coronary arteries and may help develop ways to prevent or reverse disorders such as hypertension and coronary artery disease, Shukla said.

The research, published in the American Journal of Physiology: Heart and Circulatory Physiology, was funded by a National Institute of Health grant.

The study provides good evidence about what happens in developing fetuses, said NDSU professor Stephen T. O'Rourke, grant writer and primary investigator for the project.

“That’s a big topic of research right now that’s very important,” he said.

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