MedicalXpress

First study of its kind finds rapid declines in worldwide physical activity

June 15 2012

(Medical Xpress) -- A new study by University of North Carolina at Chapel Hill researchers finds a global decline in activity levels and predicts a continuing rise in inactivity in countries around the world. When viewed in the context of physical activity levels throughout human evolution, the global decline in physical activity in just the past few decades is particularly abrupt.

The study, conducted by Barry Popkin, Ph.D., W.R. Kenan Jr. Distinguished Professor of nutrition, and Shu Wen Ng, Ph.D., research assistant professor of nutrition, both at UNC's Gillings School of Global Public Health, used extensive data from the 1960s onward to determine how people around the world spend their time and how they move in the course of their daily lives. The resulting publication, "Time use and physical activity: a shift away from movement across the globe," appeared online in *Obesity Reviews* Early View Section today and will be published in the August issue (*Obesity Reviews* Volume 13 Issue 8 August 2012). *Obesity Reviews* is an official journal of the *International Association for the Study of Obesity*.

"We have understood for some time that children and adults in the United States are increasingly spending more time in front of televisions and in other sedentary activities such as playing computer games, using computers and texting on cell phones," said Ng, who is the study's senior author. "This study shows that the same shifts have also occurred in China, India, Brazil and the United Kingdom. In fact, we find adults in the U.K. are more sedentary than those in the U.S."

Popkin noted that the introduction of home technology that includes rice cookers, refrigerators, stoves, washing machines and microwaves is global, reducing the time traditionally spent producing food and completing housework. Similar technological changes have led to less walking, more use of cars and buses, and in general, have lowered activity spent in travel across the world.

Historically, Ng said, adults have been most active in their jobs. Now, she says, “whether you live in China, India or the U.S., computers and many forms of automation remove physical exertion at work. Changes in the types of work people do have greatly reduced our overall activity levels over the past half-century.”

The study uses repeated nationally representative studies on time-use from the United States, the United Kingdom and China, along with more limited nationally representative time allocation data from Brazil and India, to document very rapid declines in physical activity. This is particularly true in China and Brazil, the countries with the two highest absolute and relative rates of decline in total physical activity and some of the higher increases in sedentary time.

For these two countries, declines in activity were driven largely by reductions in movement at work, at home, and to a lesser degree, in travel or transportation. This is not surprising given that in the past few decades, the Chinese and Brazilians have been shifting away from agriculture into manufacturing, service and other sectors, increasing use of machines and labor-saving technology in the workplace, and acquiring greater access to home technologies (e.g., electrification, piped water, appliances), as well as motorized vehicles.

The study makes projections, given continuation of the current trends, for the levels of activity in the five countries in 2020 and 2030. The forecasts are bleak. Using a physiological measure called metabolic

equivalent of task (MET), which describes the amount of energy spent in accomplishing a task, the study determined that by 2020, the average American adult will expend about 190 MET hours per week. In comparison, a person who slept 24 hours in a day would expend 151 MET hours per week, and an active adult who did vigorous activity for 30 minutes to an hour every day, but otherwise had a desk job, would expend between 240 and 265 MET-hours per week.

People in Britain will reach the 190 MET hours level by 2030. Those in China and Brazil will continue on a steeper downward trend, reaching the U.S. and U.K. physical activity levels by 2030. The situation in India appears less severe, but the average of the levels masks the stark socioeconomic dichotomy likely to continue in India, with wealthier Indians leading lifestyles similar to those of the British.

These changes will have significant implications for health outcomes, health-care costs, and overall functional well-being of societies around the world. In addition, it is important to note that how we move has a great deal to do with global health, human development and well-being Physically active children learn better, active adults live longer and are more functional and active women are less prone to osteoporosis and bone fractures. By focusing on these five countries, which represent more than 3 billion individuals (nearly 50 percent of the world's population), this study presents what can be expected if no action is taken to curb rapid declines in physical activity and increases in sedentary behavior.

The study authors call for global initiatives and advocacy efforts in all regions of the world to build momentum to study and effectively intervene in all domains of movement. Given the material impact that physical activity has on health, human development and national well-being, Popkin noted "one of the most important activities for governments to undertake going forward is to start to measure

population-wide physical activity levels. In particular, long-term investments to create a publicly accessible, worldwide physical activity standard would be a significant advancement for the field."

"Our hope is that this multicountry study will spur global action to reduce sedentary behavior and increase activity across multiple domains of daily activity," Ng said. "Being active throughout our daily lives and across the life cycle is important in terms of human development, health outcomes and economic productivity."

More information: dx.doi.org/10.1111/j.1467-789X.2011.00982.x

Provided by University of North Carolina at Chapel Hill School of Medicine