

# Obese children experience later mortality post liver transplantation

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A new study from the University of Washington reported obese children are at increased mortality risk in later years following primary liver transplantation (LT). Pediatric patients who are thin or severely thin, experience an early mortality risk within the first year post-LT. Details of the ten-year survival analysis are published in the November issue of *Liver Transplantation*, a peer-reviewed journal of the American Association for the Study of Liver Diseases (AASLD).

Childhood obesity is a serious public health concern worldwide. According to the World Health Organization (WHO), the prevalence of obesity has been increasing at an alarming rate, with 22 million children under the age of five worldwide who are overweight. In the U.S., the National Center for Health Statistics estimates that 17% of children between the ages of 2 and 19 years old are overweight or obese.

"Controversies exist regarding the mortality of patients undergoing liver transplantation at the extremes of body mass index (BMI), and in pediatric patients weight is typically the only factor considered in survival analysis," explained lead study author André Dick, M.D., from Seattle Children's Hospital and the University of Washington. "Our study is the largest thus far to report on the impact of pre-transplant BMI on post liver transplant survival in the pediatric population." Prior studies in adult populations have shown there to be a negative impact on post transplantation survival for LT patients with extreme BMIs.

For the present study, researchers reviewed data from the Organ Procurement and Transplantation Network (OPTN) and found that 7,942 patients less than 18 years of age (who had full BMI data) underwent primary [liver transplantation](#) between 1987 and 2007. Using the WHO BMI criteria, the authors categorized patients as severely thin, thin, normal weight, overweight, or obese. During the study period 61% of patients were at normal

weight.

Results indicate that children who were thin or severely thin had a significantly lower survival (84%) at one year compared to the survival (89%) of children in the normal and overweight groups. Researchers found no significant difference in survival during the first year after transplantation for obese pediatric patients. However, by the twelfth year following LT, those in the obese group had significantly lower survival (72%) than the survival (77%) of normal weight or overweight pediatric patients.

The authors observed that obesity had a significantly negative impact on pediatric patient survival more than five years after LT. They speculate post metabolic syndrome (PTMS) could contribute to the late morbidity and mortality due to the time it takes to develop long-term obesity-related conditions such as diabetes, hypertension, and hyperlipidemia. Moreover, long-term use of immunosuppressive therapy following transplantation, which while improving patient survival, can exacerbate the effects of PTMS. "Further research is needed to determine the optimal immunosuppressive regimen that will lessen the effects of PTMS," concluded Dr. Dick. "Pre- and post-transplant identification of malnourished or obese pediatric patients, along with optimization of their modifiable risk factors will help to best use scarce donor organs and maximize patient survival."

**More information:** "The Impact of Obesity on Children Undergoing Liver Transplantation." André A.S. Dick, James D. Perkins, Austin L. Spitzer, Oliver B. Lao, Patrick J. Healey, Jorge D. Reyes. *Liver Transplantation*; Published Online: August 27, 2010 ( [DOI:10.1002/lt.22162](https://doi.org/10.1002/lt.22162) ); Print Issue Date: November 2010.

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