Efficacy of Long-Term Oral Nutritional Supplementation with Dietary Counseling on Growth, Body Composition and Bone Mineralization In Children with or at Risk for Undernutrition:

A Randomized Controlled Trial

TRANSCRIPT

Narrator:

Welcome to Abbott Nutrition Health Institute's Nutrition Research Reviews, highlighting current publications in the field of nutrition and clinical care. This video summarizes "Efficacy of Long Term Oral Nutritional Supplementation with Dietary Counseling on Growth, Body Composition, and Bone Mineralization in Children with or at Risk for Undernutrition: A Randomized Controlled Trial

Undernutrition in early childhood is a global health concern. It is linked not only to impaired growth, but also to deficits in lean mass and bone mineralization. These factors can have lasting consequences on physical, cognitive, and metabolic development. Oral nutritional supplements, or ONS are known to support catchup growth, but their impact on the quality of growth, specifically lean tissue and bone development, has remained underexplored. To address this gap, the SPROUT study: Supporting Pediatric gRowth and health OUTcomes, was designed to evaluate the efficacy of long term ONS combined with dietary counseling compared to dietary counseling alone.

The SPROUT study considered children aged 2 to 5 years who were undernourished or at risk of undernutrition. The primary aim: to assess improvements in growth, body composition, bone mineralization, and overall health outcomes. This 240 day, community based, randomized, controlled trial was conducted across one primary center and seven preschool satellite sites in Vietnam. A total of 330 children aged 24 to 60 months were randomized into two groups.

One group received two daily servings of a complete and balanced ONS, along with dietary counseling, while the other group received dietary counseling alone. Assessments were conducted at baseline and at days 30, 120, and 240. These assessments included anthropometric measurements, dietary intake, DXA scans for body

composition and bone mineralization, nutritional biomarkers, and parent reported health outcomes. Children in the ONS plus dietary counseling group demonstrated significantly greater improvements in height and weight compared to the control group.

These differences increased over time, indicating sustained linear catchup growth. Beyond improvements in height and weight. The sprout study placed a strong emphasis on the quality of growth, particularly in body composition. Children who received ONS plus dietary counseling experienced significantly greater gains in lean mass, with a lean mass index of 11.06kg/m², compared to 10.92kg/m² in the control group. This indicates that the increase in lean tissue was more than proportional to height gain.

Moreover, bone health was notably improved. The ONS group demonstrated higher total body bone mineral density 0.407 versus 0.399g/cm², alongside greater bone mineral content at key skeletal sites, including the spine and hips. Importantly, these gains occurred without an increase in fat mass. This underscores that the intervention supported healthy, metabolically favorable growth. These findings highlight the critical role of targeted nutritional interventions in promoting not just weight and height gain, but the development of lean tissue and bone.

Both are key determinants of long term health outcomes. Energy and protein intake were significantly higher in the ONS group, with 26% and 22% increases, respectively. By day 240. Nutrient adequacy for energy, carbohydrates, and fats was also markedly improved. Serum vitamin D and K levels were significant better in the ONS group, with 73.5% achieving vitamin D sufficiency, compared to 61.7% in the control group.

Vitamin K status assessed via osteocalcin ratios also improved. Parent reported outcomes further supported the benefits of ONS. Fewer sick days and missed school days, improved appetite, energy, physical activity and sleep quality, and reduced health care expenditures and parental work absences. The intervention was well-tolerated, with no significant differences in adverse events between groups. The sprout study provides robust evidence that long term ONS, when combined with dietary counseling, not only supports linear catchup growth, but also enhances the quality of growth through increased lean mass and bone mineralization.

These findings underscore the importance of addressing not just weight gain, but the composition of that gain in children with or at risk of undernutrition. For clinicians and researchers, SPROUT highlights the value of comprehensive nutritional strategies that go beyond calories, supporting metabolic, skeletal, and functional health in early childhood. To learn more, scan the QR code on screen.