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Obligate midwifery as a strategy to minimize postpartum hemorrhage. FG Lynch, ET Abrams. Anthropology Department, University of Illinois, Chicago, Illinois.

The human female’s pelvis has evolved an imperfect shape because of the trade-off between habitual bipedalism and the birthing of large-brained infants. Trevathan (1987) argued that this compromise precipitated the uniquely human pattern of obligate midwifery, in which birth attendants aid in delivering the neonate. However, women who successfully deliver newborns still face serious risks, particularly in the period immediately following birth. Postpartum hemorrhage (PPH) is the leading cause of maternal morbidity and mortality and accounts for ~25% of all maternal deaths. Although mechanical difficulties in childbirth, including cephalopelvic disproportion and fetal malpresentation, occur in 4.6% of births, PPH occurs in more than twice that number (10.5%). Although the risk factors for PPH have not been completely delineated, uterine atony and placental retention are most commonly implicated. In a biomedical setting, blood transfusions are the most common treatment, an option that was not available historically. We suggest here that the selective pressure of PPH was extremely important in the evolution of obligate midwifery because the interventions that can decrease the severity of postpartum bleeding cannot be performed by the birthing mother. Therefore, the presence of a birth attendant, who could perform uterine massage and manual placental removal, would have increased the survival rate of mothers with PPH. Using data from HRAF files and current literature, this paper documents and quantifies the methods that birth attendants utilize to minimize postpartum bleeding.

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Physical activity measured using accelerometry in an indigenous lowland Ecuadorian population. FC Madimeño1,2, LS Sugiyama1,2,3. 1Department of Anthropology, University of Oregon, Oregon; 2Institute of Cognitive and Decision Sciences, University of Oregon, Oregon; 3Center for Evolutionary Psychology, University of California, Santa Barbara, California.

The shift toward market integration often leads to increases in the occurrence of obesity, cardiovascular disease, and type 2 diabetes. One major factor thought to contribute to this shift in disease patterns is a reduction in physical activity as populations transition away from traditional subsistence economies toward increasingly sedentary occupations. However, measurement of physical activity is notoriously difficult and until recently the primary means of documenting activity levels were through time-consuming behavioral observations or self-report methods. Advances in accelerometer technology provide a new tool for noninvasive means of recording the intensity and frequency of daily activities in field settings and allow estimates of total energy expenditure (TEE). The present study uses Actical accelerometers to document activity levels among Shuar adults from a small rural community in the southeastern Amazonian region of Ecuador. The local economy is focused around subsistence horticulture but is currently transitioning to more intensive agricultural activities. Each participant wore accelerometers for two consecutive days. TEE was estimated based on activity counts and basal metabolic rates (BMRs) estimated from fat-free mass. Physical activity levels (PALs; TEE/BMR) were compared to published values for other subsistence populations and were examined according to diet and lifestyle measures (e.g., water source, electricity). Moderate levels of activity were documented over extended durations of time with variation by sex, age, and certain lifestyle measures. Additionally, we compare types of data obtained from heart-rate monitoring, doubly labeled water, and time allocation and discuss advantages and limitations of accelerometry use in subsistence populations.

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Role of environmental factors in detection of susceptibility loci for adiposity phenotypes in Samoans. ST McGarvey. International Health Institute, Brown University, Providence, Rhode Island.

In prior genome-wide linkage studies of adiposity traits, including BMI, abdominal circumference, percentage body fat, serum leptin, and adiponectin, we investigated families in American Samoa and Samoa separately and found little overlap in genomic regions between the two polities, despite adjustment for age, sex, years of education, cigarette smoking, and farm work. Because the two polities share evolutionary history but are differently influenced by economic development, levels of income and wealth, and the nutritional transition, we attempted to discover genetic factors contributing to adiposity throughout the entire Samoan archipelago by combining the two study samples. We employed variance component methods to calculate univariate and bivariate multipoint LOD scores while controlling for the environmental covariates including polity of residence, age, sex, years of education, cigarette smoking, and farm work. A region on 9p22 had genome-wide significant linkage for the bivariate phenotypes ABDCIR-%BF (LOD 3.30) and BMI-%BF (LOD 3.31) and two regions had suggestive linkage on 8p12 and 16q23 for adiponectin (LOD 2.74) and the bivariate phenotype leptin-ABDCIR (LOD 3.17), respectively. These discrepant results compared to our previous polity-specific investigations, and the impact of different adjustments for individual-level and group-level environmental factors suggest that environmental effects contribute substantial, different, and important variation in different study samples. The results also suggest the critical role of potential gene by environment interactions on adiposity traits. These results strongly encourage further studies of adiposity-related phenotypes where extended sets of carefully measured environmental factors are taken into account.