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Biomedical Anthropology

- A subfield of **Biological Antropology**
  - traditional interests of biological anthropology (evolution, human variation, genetics, behavioral ecology)
- an empirical approach
- **Cultural & Ecologoical:**
  - Comparative work across cultures and environments
- Theoretically informed hypothesis testing
  - Data driven
  - Follows the scientific method
- related: **Epidemilogy**

- Population-level health research
- Statistical analyses based

Rates: Disease and Mortality

- rate : velocity (dx/dt)
- rate per 1000 individuals = (events/population at risk) * 1000
- crude death rate: (all deaths during calendar year / population at midyear)
  - midyear : agreed upon time to gather population
- disease rate
- incidence rate: = (number of new cases of disease / total population)/period of time (over a period of time, more or less the average over all)
- prevalence rate: basically the rate at a given time
  - dx/dt = 2t at t = 0.

Top Causes of Deaths

- In the last 100-120 years, the amount of deaths by contagious diseases has declined
  - Countries have gotten richer
  - Better access to nutrition, vaccinations
  - Infrastructure
- The most common form of death is lifestyle diseases, such as cancer and heart disease. Can be attributed to aging.

Connection of Wealth and Longevity

- Countries that have a higher GDP tend to do better, all political feelings aside
- Child mortality rate is very low in the modern world, at an all time low of 4.5% reported in 2015

Illness and Wellbeing

- Understood to be products of
  - Genes
  - Culture

  - Environment
  - Diet
  - Economic and educational systems
  - Evolution

Heart Disease

- Has been around for a while (Ancient Egyptians seen to have this problem)
- Universal feature of human aging
  - Not common in young people

Comparing American Diet to Paleo

Dietary Component	Paleolithic Diet	Contemporary Diet
Energy (calories)	High to support active lifestyle – higher if colder	High but beyond needed to support sedentary lifestyle
Micronutrients (vitamins, antioxidants, folic acid, iron, zinc)	High: 65-70% of diet rich in (from fruits, roots, nuts)	Low
Electrolytes (sodium, calcium, potassium)	Potassium high (10,500/day) sodium low (770/day) - good b.p.	Potassium low (3000/day) sodium high (4000/day) – high blood pressure
Carbohydrates	High: providing 45-50% of daily calories (from vegetable, fruits, roots)	High: providing 45-50% of daily calories (from cereal grains, sugars)
Fat	Provides 20-25% daily calories, better kind of fat from nuts, fish, and wild animals – high in Omega 3s	Provides 40% daily calories, domesticated meat and dairy – high in Omega 6 and saturated fats
Protein	High 30% daily calories from wild game.	Recommended: 12% of daily calories… (bad assoc.)
Fiber	50-100g/day	20g/day

Figure 1: Comparison

Epidemiological Transitions

- Introduction of agriculture
  - A sustainable source of food in a controlled environment
- Introduction to large urban populations across societies and introduction of industrialization in developed countries
- Secular changes: height, weight, menarche, life expectancy

Evolutionary Medicine: Understanding disease from a Darwinian Perspective

- Defense vs. Defects
  - coughs, sneezing are ways to rid infectious material through various organs
  - Fevers are ways to kill bacteria
- Arm races: pathogens and hosts gain reproductive advantage by developing resistances to one another
- Cultural & Behavioral Interventions
  - Quarantine, vaccination
- Habits (behaviors, interactions, movements)
  - Affect chances of diseases “winning” and spreading.
  - *hosts, pathogens, mode of transportation*
- Dietary deficiencies
  - Heavy dependency on corn, rice, etc.
- Pleiotropic gene effects
  - When one gene is linked with several traits
  - Several diseases do not manifest in the EEA (Environment of Evolutionary Adaptedness)

Design Compromises

Prostate Problems

- Urination, bladder control
- Enlarged prostates will increase the likelihood of erectile dysfunction

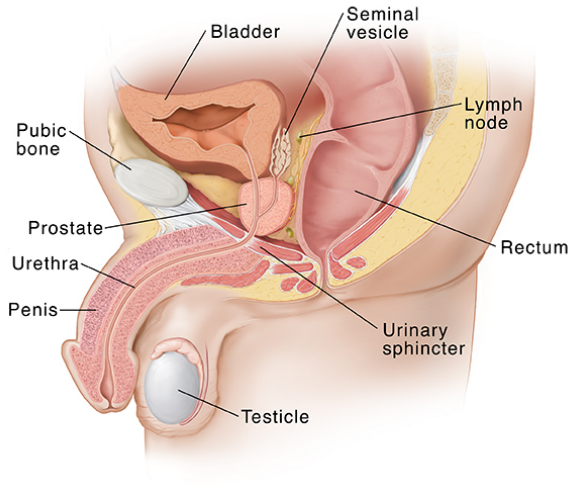

Figure 2: Prostate Diagram

Pregnancy Problems

- Incontinence (loss of bladder control), constipation (unable to poop/defecate), back pain
- **Ectopic Pregnancy:** when the fetus develops outside of the uterus, typically in the fallopian tubes

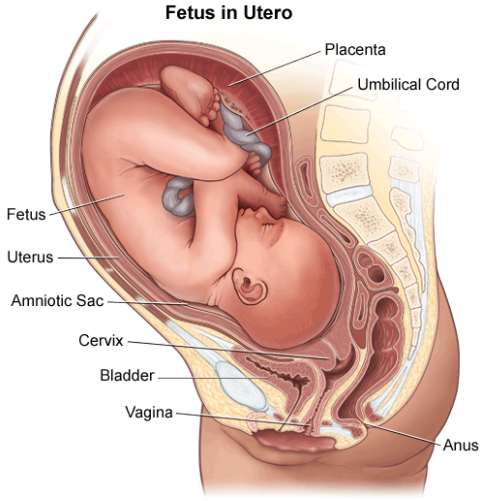

Figure 3: Fetus in Utero

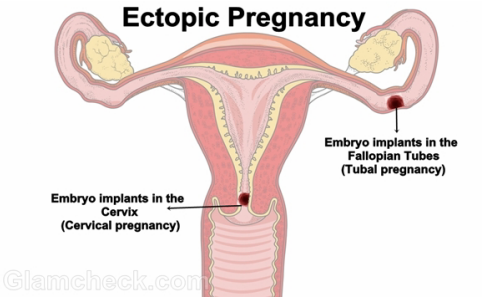

Figure 4: Ectopic Pregnancy

Windpipe Hazards

- Increased risk of choking

Birthing Process

- In humans and neanderthals, birthing is difficult because it is tight (small birthing canal)
- There is a high risk of injury or death for both the baby and the mother
- There is often assistance in this process
  - Most non Western cultures will give birth in a squat, less resistance
  - Western culture will give birth in a reclined position

Complications Carrying to Term

- **Teratogens:** substances that cause birth defects
- **Fetal Alchol Syndrome:** a form of teratogen that will cause retardation (in the literal sense of the word) of mental development/capacity, physical growth particularly in the skull and face
  - Put down the whiskey you sick fuck
- **Morining Sickness:** characterized by vomiting right as an expectant mother wakes up
  - Hypothesized to protect the embryo from harmful teratogens
  - Women who experience morning sickness are less likely to miscarry
  - The greatest aversions (not wanting to be apart of something) are to meats, fish, poultry, and eggs

Pregnancy, Childbirth, Parenting (Continued)

Evolutionary Context

```
- Evolutionary Function of Crying
- Human Infants as “Carried Young”
- Co-sleeping
- Breastfeeding
- Heartbeat and Uterine Sounds
- Movement Stimulation
- Swaddling
- Continuous and Multi-Sensory Stimulation
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Health Aspects of Natural Parenting

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- Skin-to-Skin Care for Preterm Infants
- Touch Effects on Physiology
- Physical Growth
- Immunological Processes
- Thermal Regulation
- Orthopedic and Other Health Aspects of Infant Carrying
- Gastroesophageal Reflux and Media
- Infant Toilet Training Elimination Communication
- Bed Sharing and SIDS
- Breastfeeding
- Psychological Correlates / Attachment
- Brain Development Physiology Meets Psychology
- Infant Carrying
- Cosleeping/Bed Sharing and Room Sharing
- Infant Feeding: Breast feeding, wet nursing, artificial feeding
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ˆ Yeah, I don’t know why pandoc makes a table but it looks cool

External Links

EEA Summary