Psychology 350
Human Sexuality

September 23, 2009
Menstrual Cycle, Conception, & Pregnancy

Hormonal changes in puberty

- Puberty defined hormonally (vs adolescence which is defined socially)
- Hypothalamic pulses of GnRH
- Rise in LH and FSH from AP
- LH and FSH act on ovaries and testes

- Hormonal puberty takes place 1-2yrs later in boys

Hormonal changes at puberty: Male

LH effects
- stimulates the leydig cells to produce T
- T stimulation leads testes to grow
- T → DHT then leads to pubic hair growth and penis enlarges and lengthens
- Facial and chest hair continue well past age 20
- Huge increase in muscle mass from T
- Voice deepens, larynx matures
- T → E: gynecomastia (breast enlargement) occurs in 80% of boys at puberty

- Ejaculation starts age 13-14
- Mature sperm and fertilization possible by age 15

- T also diffuses to seminiferous tubules…

In men:
Hypothalamic-pituitary-gonadal (testicular) axis

ABP – androgen binding protein

Hormonal changes at puberty: Male

FSH effects
- Targets sertoli cells (seminiferous tubules) to facilitate spermatogenesis
- FSH → increased androgen binding protein (ABP) in sertoli cells
- ABP binds testosterone
- ABP-testosterone necessary for spermatogenesis

Hormonal changes at puberty: Female

LH effects
- Theca cells of ovaries → produce E
- first change is breast development age 9-10
- fatty deposits also at the hips and buttocks
- age 12-13, menarche begins – although not capable of becoming pregnant until ovulation begins (1-2 yrs later)
- Adrenal and ovarian E+T: hair

Hormonal changes at puberty: Female

FSH effects

- Targets ovarian follicles: egg maturation

Oogenesis

Prenatally = 2 million oocytes

At birth = 400,000 oocytes

↓

Few activated monthly starting at puberty

↓

Only 1 continues meiosis

Menstrual cycle

1. Follicular
- High FSH stimulate follicles, bringing one egg to maturity
- Mature egg secretes E

2. Ovulation
- High E → ↑GnRH → LH (+ve)
- Follicle swells
- Egg released

3. Luteal
- LH causes follicle to become corpus luteum → P → reduces LH → corpus luteum degrades → E and P drop

4. Menstruation
- Triggers shedding of endometrial lining

Follicle-stimulating hormone
Luteinizing hormone
Pituitary Hormone Cycle
Follicle
Corpus luteum
Ovulation
Ovarian Cycle
Estrogen
Progesterone
Sex Hormone Cycle
Uterine lining
Menstruation
Follicular Phase
Luteal Phase
Ovulatory Phase
Day of Cycle

Some menstrual problems

- Dysmenorrhea = painful menstruation
- Endometriosis = when the endometrium of the uterus grows in a place outside the uterus
- Amenorrhea = absence of menstruation

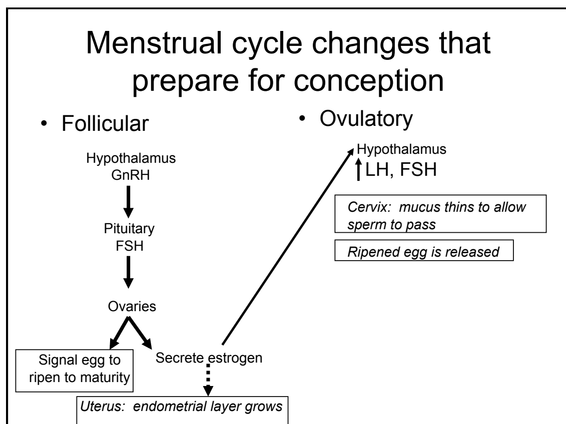
Does Premenstrual Dysphoric Disorder exist?

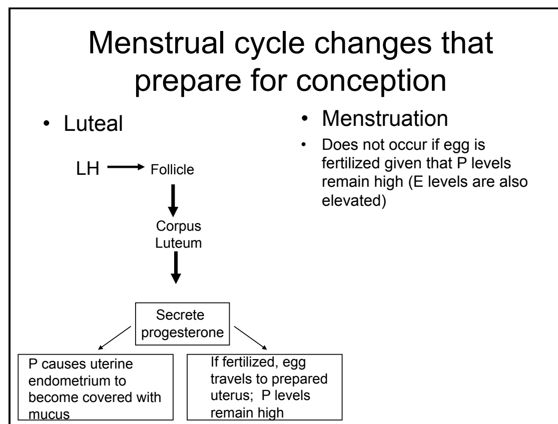
- In DSM "requiring further study" section
- Interaction of serotonin and fluctuating gonadal hormones
- 3-9% of women

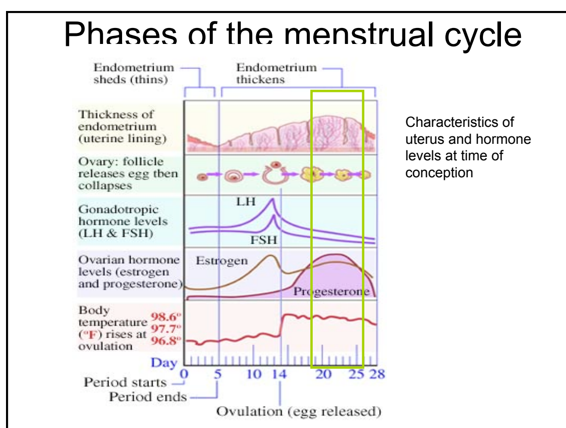
Concerns about PMDD

1. Is PMDD being confused with MDD?
2. Classification as a mental illness is stigmatizing
3. Pharmaceutical interests

Phase out symptoms of PMDD
Sarafem. fluoxetine hydrochloride

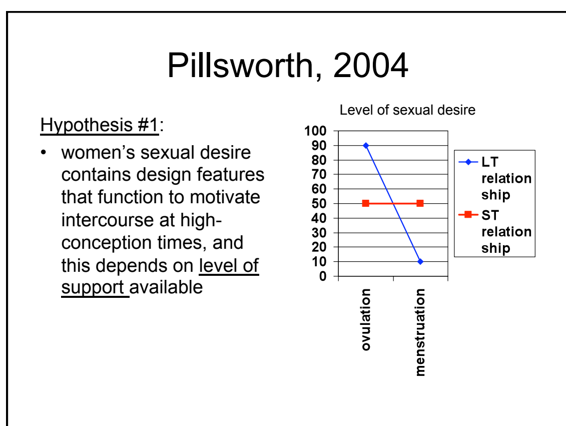


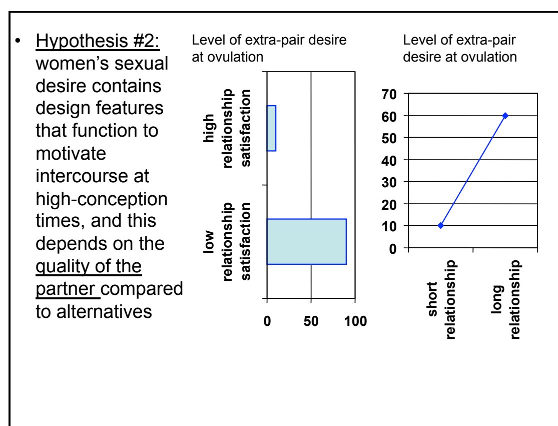




Sexual desire, ovulation, and evolution

- Historically, menarche occurred later, lactation was longer, and lifespan was shorter → fewer ovulation opportunities
- Research on this inconsistent:
  - Peak of intercourse at ovulation (but depends on whether woman had menstrual problems or not)
  - Intercourse decreases at menstruation but masturbation increases
  - Sexual arousability not affected by menstrual cycle
- Methodological problems until recently:
  - How to accurately quantify ovulation?
  - How best to define sexual behaviour?
  - How to control for confounding variables?





Bullivant, 2004

- Problem in prior studies: crude measure of ovulation
- Measured ovulation comprehensively
  - preovulatory LH surge in urine (daily collections of urine beginning 1 week before the expected date of LH surge)
  - vaginal secretions and cervical mucus through a daily diary
  - basal body temperature
  - measured hormone levels of pregnanediol-3-glucoronide using immunoassay (this hormone rises after ovulation has occurred)

Bullivant, 2004 (cont.)

- Correlated these with diary of sexual activity
  - sexual activity was highest during follicular phase and lowest during the first 3 days of menstruation
  - female-initiated sexual activity peaked during the 3-day period ending on the day of the LH surge onset
- Is ovulation correlated with sexual desire?
  - only partnered women reported higher desire for sexual activity during ovulation
  - BUT, no increase in male-initiated behaviours

Pregnancy outcomes by province or territory of residence
(Total Pregnancies)

	2005	
	Total Pregnancies[1]	
	number of events	rate per 1,000 women[2]
Canada	**447,485**	**54.6**
Newfoundland and Labrador	5,524	42.3
Prince Edward Island	1,503	43.8
Nova Scotia	10,568	45.2
New Brunswick	7,987	42.8
Quebec	107,169	57.2
Ontario	169,838	52.6
Manitoba	17,109	59.8
Saskatchewan	14,153	59.5
Alberta	54,646	63.2
British Columbia	56,369	52.0
Yukon	474	54.5
Northwest Territories	1,020	85.6
Nunavut	938	120.3
Unknown province or territory	187	...

... : not applicable.
1. Pregnancies equal the sum of live births, fetal loss, and induced abortions.
2. Rates are based on the population of women aged 15 to 49 years.
Source: Statistics Canada, Canadian Vital Statistics, Birth Database and Stillbirth Database; Canadian Institute for Health Information, Hospital Morbidity Database and Therapeutic Abortion Database. The Statistics Canada publication

Pregnancy outcomes by age group
(Total pregnancies)

	2005	
	Total pregnancies[1]	
	number of events	rate per 1,000 women
All ages[2,3]	**447,485**	**54.6**
Under 20[4]	30,948	24.6
Under 15[5]	414	1.9
15 to 19	30,534	29.2
15 to 17	9,899	15.8
18 to 19	20,635	49.0
20 to 24	87,099	79.4
25 to 29	129,106	118.9
30 to 34	124,135	112.5
35 to 39	61,040	51.9
40 and older[6]	15,026	11.0

1. Pregnancies equal the sum of live births, fetal loss and induced abortions.
2. Rates for the "All Ages" group are based on the population of females aged 15 to 49 years. The numerator used in the rate calculation is the total number live births, occurring to females, regardless of their age.
3. Totals for "All ages" include number of events with unspecified age groups.
4. Rates for "Under 20" are based on the female population aged 14 to 19 years.
5. Rates for "Under 15" are based on the female population aged 14 years.
6. Rates for "40 and older" are based on the female population aged 40 to 44 years.
Source: Statistics Canada, Canadian Vital Statistics, Birth Database and Stillbirth Database; Canadian Institute for Health Information, Hospital Morbidity Database and Therapeutic Abortion Database. The Statistics Canada publication Reproductive Health: Pregnancies and Rates, Canada, 1974-1993 (Catalogue no. 82-568-XPB) and CANSIM, table 106-9002 was a major source of data for the years prior to 1994.
Last modified: 2009-09-21.

Find information related to this table (CANSIM table(s); Definitions, data sources and methods; *The*

Conception facts

- Takes about 5 days for the egg to reach the uterus if it has been fertilized
- Unfertilized egg disintegrates
- Sperm swim 1-3cm/hour. They are propelled by flagellation of the tail and contractions of the uterus
- Sperm meets the egg in the fallopian tube near the ovary
- 300 million sperm in ejaculate→ 2000 reach the correct fallopian tube
- Sperm live for 5 days inside woman; eggs live for 12-24 hours after ovulation

When sperm meets egg

- **Zona pellucida** is a strong membrane that forms around an ovum as it develops in the ovary
- sperm must penetrate the thinning zona pellucida
- Many sperm produce an enzyme called **hyaluronidase** which dissolves the zona pellucida and allows one sperm to enter the egg
- If fertilization takes place, the membrane disappears to permit implantation in the uterus
- Fertilized egg = **zygote**
- First 8 weeks of life = **embryo**
- After 8 weeks = **fetus**

Planning conception

- Limit alcohol consumption to increase sperm
- Calculate when ovulation will occur:
- Calendar (rhythm method) – estimating ovulation (between 9 – 17 days before period)
- Basal body temperature method – BBT falls 1-2 days before ovulation and rises 1-2 days after
- Cervical mucus method (Billings method) –before and during ovulation, mucus increases and is thinner, slippery, clear, and stretchy
- Hormone monitoring – measure urine LH
- Combined methods (Symptothermal method) – BBT, cervical mucus, hormone monitoring, physical signs of ovulation

Pregnancy tests

URINE
- Based on human chorionic gonadotropin (hCG) which is secreted by the placenta
- In clinic: 98-99% accurate
- At home: high false +ve and false –ve rate

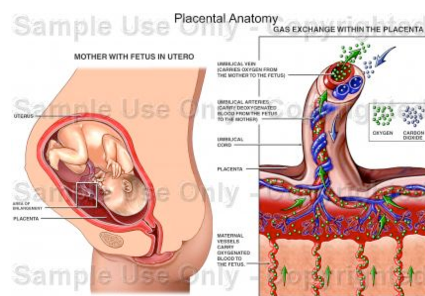
BLOOD
- Based on beta-hCG in blood
- Radioimmunoassay
- In laboratory: can detect pregnancy very early

Pregnancy characteristics: 1ST Trimester (weeks 1 – 12)

EMBRYO/FETUS
- Rapid cell division
- organ and CNS development
- formation of all extremities

MOTHER
- Most changes due to increase in E and P
- missed period, tender breasts, occasional cyclic bleeding, nausea, vomiting, emotionality
- Fear of miscarriage
- Psych changes due to:
  - Attitude to pregnancy
  - SES
  - Social support

Umbilical cord and placenta



**umbilical cord attaches baby to placenta **placenta attaches to wall of uterus

Pregnancy characteristics: 2nd Trimester (weeks 13-26/27)

FETUS
- Detect heartbeat
- movement, “quickening”
- cycle between sleep and wakefulness

MOTHER
- most physical symptoms dissipate
- new ones: constipation and nosebleeds, edema
- colostrum from nipples (yellow fluid)
- General feeling of well-being

Pregnancy characteristics: 3rd Trimester (weeks 27/28-40)

FETUS
- fat deposits and rapid growth from 7th month onwards
- changes position to “face down”

MOTHER
- difficulties sleeping from size
- Pressure from uterus on other organs → shortness of breath, indigestion, heart strained, navel protrudes, fatigue.
- Braxton-Hicks contractions.
- Baby “engages”

Pregnancy symptoms in men

Couvades syndrome (or sympathy pregnancy)

- Indigestion, gastritis, nausea, change in appetite, headaches
- 11-22% of first-time fathers
- Higher prolactin (facilitates bonding)
- Lower testosterone post-natally (less aggression and greater responsiveness to the infant)

Potential theories of Couvades

- Expression of anxiety over birth
- Sympathy/empathy for the partner
- A method of bonding with baby
- An assertion of paternity
- Outward display of ambivalence towards fatherhood

Sexuality and Pregnancy

IC freq per week	Pre-preg	12 wks preg	24 weeks preg	36 weeks preg
None	0%	11%	8%	36%

- Sex is generally safe during pregnancy
- Arousal may increase in 2nd trimester
- Why the overall decline?
  - physical complaints reduce desire
  - Partner perceptions (fears) about hurting fetus
  - Woman's large shape
- **Gokyildiz, 2005 –** 150 interviews with women in 34th week
  - Women had less initiation of sexual activity
  - Duration of intercourse reduced
  - Satisfaction dropped from 70% pre-pregnancy to 20% in T3
  - BUT, vaginal dryness decreased with pregnancy!

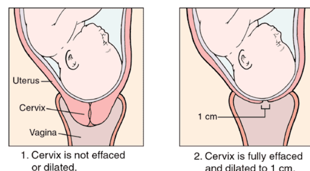
Birth

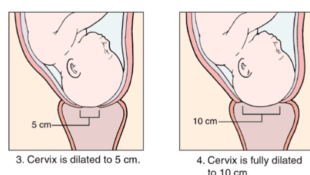
- Signs of labour = discharge, bloody mucus, ruptured membranes
- Leading theory: antiprogesterone reduces P levels → uterine contractions occur
- Stage 1: effacement and dilation of cervix, increasingly intense contractions, cervix dilates to 10cm, lasts 12-15 hours

Stage 2: Baby's head "crowns", urge to push, delivery (+/- episiotomy), no need for umbilical

Stage 3: afterbirth (delivery of placenta)

Cervical Effacement and Dilatation During Labor





Postpartum period

- Major physiological changes:
  - Placenta during pregnancy → high levels of estrogen and progesterone; drops significantly after birth
- Psychological adjustment
  - 50-80% of women have maternal blues
  - 10-20% of women have postpartum depression
  - Lasts up to 2 months: depressed mood, insomnia, tearfulness, feeling inadequate, irritability, fatigue
  - $<$ 1% have postpartum psychosis
  - Postpartum obsessive compulsive disorder (especially in those with prior history of OCD)

Sexuality in the postpartum

Behaviour	2nd trimester	1mon pp	4mon pp	12mon pp
Intercourse (%)	89	17	89	92
Intercourse freq/mon	4.97	.42	5.27	5.12
Masturbation (%)	25	13	20	23
Fellatio (%)	43	34	48	47
Cunnilingus (%)	30	8	44	49
Satisfaction Non-significant	3.76	3.31	3.36	3.53
Decreased desire 0-never, 4-always	1.71	1.65	1.19	.83

Hyde, 1996

Sexuality and breastfeeding

- 2 hormones involved in breastfeeding:
  - prolactin (ant pit) involved in milk production
  - oxytocin (post pit) stimulates breasts to eject milk in response to suckling
- Breast feeding rates:
  - 1963: 38%
  - 1995: 73%
  - 2003: 85%

- Advantages of breastfeeding:
  - quicker shrinking of the uterus
  - reduced likelihood of becoming pregnant
  - return of normal menstrual cycles is delayed
  - mild arousal that can be troublesome or acceptable
  - convenience
  - psychological bonding with baby
  - rest time
  - Associated with reduced likelihood of ovarian and breast cancer

Disadvantages of breastfeeding

	BF women	NBF women	Partner BF	Partner NBF
1 mon PP				
Satisfaction	3.29	3.36	2.95	3.46**
Phys affect	2.69	2.86	2.57	2.81*
Sex rel	2.09	2.38*	2.16	2.46*
4 mon PP				
Satisfaction	3.37	3.45	3.14	3.59**
Phys affect	2.64	2.89*	2.64	2.84*
Sex rel	2.35	2.63*	2.37	2.67**

Byrd, 1998

BF = breastfeeding
NBF = non-breastfeeding

- 28% of non-BF resumed intercourse
- 14% of BF resumed intercourse

Why would sexuality decrease with breastfeeding?

- **biological**:
- **psychological**:
- **social**: