Chapter 23
Reproductive System

Introduction
• Human beings reproduce sexually
• Male and female sex cells unite to produce offspring by sexual reproduction

Anatomy
• Ducts
• Gametes
• Gonads
• Penis, accessory glands, and urethra in men
• Uterus, vagina, and breasts in women

Physiology
• Produces new individuals of a species
• Genetic material is passed from one generation to another
• The species is continued

Sex Cells
• Oocytes—female sex cells
• Spermatozoa—male sex cells

Sex Cells
• Fertilization—process of uniting the sperm with an egg
Reproductive Organs

• Primary
  – Gonads
    • Male—testes
    • Female—ovaries
• Secondary
  – Combination of ducts used to transport the reproductive cells for possible fertilization and transportation of zygote to place of incubation

Male Reproductive Organs

• Scrotum
• Testicles
• Spermatic duct—epididymis, vas (ductus) deferens, ejaculatory duct, urethra
• Accessory male sex glands—prostate gland, bulbourethral (Cowper’s) glands, seminal vesicles
• Penis

Male Reproductive Organs

• Interstitial cells of Leydig
  – Produce testosterone

Female Reproductive Organs

• Ovaries
• Fallopian tubes (oviducts)
• Uterus (womb)
• Vagina (birth canal)
• Vulva
• Breasts (mammary glands)
Female Reproductive Organs
• Uterus, fallopian tubes, and vagina

Female Reproductive Organs
• Female breast

Female Reproductive Cycle
• Four phases
  – First phase (menstruation): day 1-5
  – Second phase (before ovulation): day 5-14
  – Third phase (ovulation): day 14
  – Fourth phase (after ovulation): day 15-28

Female Reproductive Cycle
• Stages of ovarian follicle development

Female Reproductive Cycle

Sexual Intercourse
• Men
  – Erection—enlargement and stiffening of the penis; penile arteries dilate and fill the sinuses with blood
  – Lubrication—mucus secreted through urethra from bulbourethral (Cowper’s) glands
  – Orgasm—semen is expelled from the urethra (ejaculation)
Sexual Intercourse

- **Women**
  - **Erection**—clitoral erection and widespread sexual arousal result from stimulation of female genitalia
  - **Lubrication**—mucus is secreted by cervical lining and Bartholin glands
  - **Orgasm**—occurs when genital stimulation reaches maximal intensity

Human Development

- **Implantation**
- **Embryonic development**
- **Fetal development**
- **Birth (parturition)**
  - **Dilation**
  - **Expulsion**
  - **Placental stage**
- **Lactation (milk production)**

Primary Germ Layers

- **Ectoderm**—outermost layer
- **Mesoderm**—middle layer
- **Endoderm**—innermost layer

Inheritance

- **Inheritance**—expression of traits and conditions passed from one generation to another through sexual reproduction
- **Deoxyribonucleic acid (DNA)**—chemical found in each cell in the body that codes for the production of enzymes
- **Gene**—section of DNA on a chromosome that codes for a specific enzyme

Human Genetics

- **Mutations**—mistakes in the gene-coding system
- **Chromosomal diseases**—caused by having too many or not enough chromosomes or by having a broken or missing piece of a chromosome
- **Gene diseases**—caused by a mistake in the DNA code of a particular gene on a particular chromosome
Pathological Conditions

- Abortion and miscarriage
- Amenorrhea
- Benign prostatic hypertrophy
- Chlamydia
- Genital or venereal warts
- Dysmenorrhea
- Endometriosis

Pathological Conditions

- Fibrocystic breast disease
- Genital herpes
- Gonorrhea
- Mastitis
- Menopause
- Menstruation
- Ovarian cysts

Pathological Conditions

- Pelvic inflammatory disease
- Premenstrual syndrome
- Prostatitis
- Syphilis
- Trichomoniasis
- Vaginal candidiasis

Summary

- The reproductive system allows humans to sexually reproduce an offspring having the characteristics of both parents
- Mutations can occur during the pairing of chromosomes
- Understanding the reproductive system and its pathologies will help the therapist provide an effective massage