Gender Differences in Depression
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Objectives

Discuss the differences in prevalence, presentation, and disease of depression in males and females

Discuss the biological, sociological, and interpersonal processes underpinnings of depression and how they differ between males and females

Describe underlying neurobiological physiological gender differences that may alter depression symptoms and treatment response
Prevalence of Depression

Affects approximately 8% of American adults in a given year

- Age of onset similar across genders
  - Middle age is largest prevalence gap

- Nearly twice as common in women than in men

Psychiatric Comorbidities

- Obsessive compulsive disorder
- Substance Abuse
- GAD
- Somatoform Disorder
- Bulimia

References:
4. Brody et al 2018 NCHS Data Brief No 303
Gender Differences in Symptomology

- Decreased libido
- Weight decrease
- Psychomotor agitation
- Refuse Treatment
- Appetite increase
- Weight increase
- GI complaints
- Suicidal Completion
- Insomnia
- Irritability
- Fatigue/low energy
- Somatic Complaints
- Sympathetic arousal
- Interpersonal sensitivity
- Aggression/Anger
- Increased risk behavior
- Close down
- Solitary
- Hypersomnia
- Suicidal attempt
- Psychomotor retardation
- Greater severity of self-reported depressive symptoms & anhedonia

Gender Specific Considerations

- Genetic links; however, genes are not linked to X chromosome
- Hormones
  - Estrogen
  - Progesterone
- Estrogen and Serotonin connection

Biological

- Stereotype that women more emotional than men
- Theories that women are more empathetic and caring towards others
- Women tend to mask emotions to fit social norms
  - “The Central Relationship Paradox”

Interpersonal Processes

- Women exposed to violence are more prone to internalize feelings
- Division of labor
  - Women at home
  - Men in the work place
- Work-family conflict more present in women
  - Significant link to depression

Sociological

## Neuroanatomical Differences

Human Brains are sexually dimorphic structures\(^1\)  
- Gene and protein expression/histone modification  
- Neurogenesis/Glial development  
- Neuronal apoptosis  
- Synaptic connectivity

<table>
<thead>
<tr>
<th>Brain Structures Larger in Males(^2)</th>
<th>Brain Structures Larger in Females(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amygdala</td>
<td>Frontal Gyri</td>
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<tr>
<td>Hippocampus</td>
<td>Pars Triangularis</td>
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<tr>
<td>Anterior Parahippocampal Gyri</td>
<td>Anterior Cingulate Gyri</td>
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<tr>
<td>Posterior Cingulate Gyri</td>
<td>Insular Cortex</td>
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<td>Precuneus</td>
<td>Heschl’s Gyrus</td>
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<tr>
<td>Putamen</td>
<td>Thalami</td>
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<tr>
<td>Cerebellum</td>
<td>Lateral Occipital Cortex</td>
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Neurochemical Differences

Differences In Monoamine Systems

Serotonin (5HT)
- Monoamine tryptophan depletion decreases 5HT transmission correlated with depressive symptoms in females
- Decreased 5HT synthesis after tryptophan depleted in females
- Higher 5HT and 5-HIAA in females
- Higher availability of 5HT transporter
- 5HT 1a decreased binding potential with age in males, not females
- 5HT and NE levels greater age related changes in females than males
- Animal models suggest estrogens alter brain serotonin levels and decrease SERT production

Dopamine (DA)
- Higher synaptic DA in Striatum in females
- Age decreases striatal DA more in men than women

5-HIAA = Serotonin Metabolite; NE = Norepinephrine; SERT = Serotonin Transporter
2. Bethea et al 2002 Front Neuroendo 23:41-100
Depression Treatment Response-SSRIs

No clear consensus\(^1\)
- Limitations in study design
- Variable demographics
- Variable medication and dosages

Some studies suggest women have a greater response to SSRI compared to men\(^1\)

Greater remission in women on SSRIs (STAR*D)\(^2\)

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SSRI = Selective Serotonin Reuptake Inhibitors
STAR*D = Sequenced Treatment Alternatives To Relieve Depression
Other Antidepressant Treatment Response¹

SNRI no gender difference is observed in response rates

Inconsistent data for gender differences with TCA or MAOIs

Side effect differences

- Weight gain from antidepressants is higher in females
- Sexual dysfunction greater in depressed females than males, but females sexual dysfunction responds better to treatment compared to males

MAOI = Monoamine Oxidase Inhibitor; SNRI = Serotonin & Norepinephrine Reuptake Inhibitors; TCA = Tricyclic Antidepressant

Inflammation Differences

- IL-17 effect on anhedonia greater in Males\(^1\)
  - Testosterone may be protective against IL-17 mediated autoimmune disorders

- IL-1\(\beta\) and TNF-\(\alpha\) have demonstrated conflicting results\(^1\)

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American Psychological Association (APA) Guidelines
Depression In Men¹

1. Recognize that masculinities are constructed based on social, cultural, and contextual norms
2. Recognize that men integrate multiple aspects to their social identities across the lifespan
3. Understand the impact of power, privilege and sexism on men and their relationships with others
4. Develop a comprehensive understanding of the factors that influence the interpersonal relationships of men
5. Encourage positive father involvement and healthy family relationships
6. Support educational efforts that are responsive to the needs of men
7. Reduce the high rates of problems men face and act out in their lives such as aggression, violence, substance abuse, and suicide
8. Help men engage in health-related behaviors
9. Build and promote gender-sensitive psychological services
10. Change institutional, cultural, and systemic problems that affect men through advocacy, prevention and education

¹. American Psychological Association Practice Guidelines for Boys and Men 2018
American Psychological Association (APA) Guidelines
Depression In Women

1. Be aware of the effects of socialization, stereotyping, and unique life events on the development of women across diverse cultural groups
2. Recognize and utilize information about oppression, privilege, and identity development as they may affect women
3. Understand the impact of bias and discrimination on the physical and mental health of those with whom they work
4. Use gender sensitive and culturally sensitive affirming practices in providing services to women
5. Recognize how their socialization, attitudes, and knowledge about gender may affect their practice with women
6. Use interventions and approaches that have been found effective in the treatment of issues of concern for women
7. Foster therapeutic relationships and practices that promote initiative, empowerment, and expanded alternatives and choices for women
8. Provide appropriate, unbiased assessments and diagnoses in their work with women
9. Consider the problems of women in their sociopolitical context
10. Acquaint themselves with and utilize relevant mental health, education, and community resources for women
11. Understand and work to change institutional and systemic bias that may impact women

Discussion
Summary

- The prevalence, presentation, and disease of depression is different in males and females

  Many factors including biological, sociological, and interpersonal processes can alter how depression presents

- Gender differences in neurobiological and physiological components may alter symptoms and treatment response
Questions
Closing
Join Our Next Conversation…

The Role Of Glutamate In Mood Disorders & Schizophrenia
March 19th @ 12:00pmET

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