COGNITIVE AND PHYSICAL DEVELOPMENT IN HIV POSITIVE ADOLESCENTS

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COGNITIVE AND PHYSICAL DEVELOPMENT IN HIV POSITIVE ADOLESCENTS

ADOLESCENCE: AN OVERVIEW
ADOLESCENCE

- Ages: 10-19 (World Health Organisation)
- Characterised: Accelerated physical growth, psychological and behavioural changes
- Sub-divided into early, middle and late periods
- Early (10-14): more independence and dependence struggles heralded by puberty: 8-11 years girls; 9 – 11.5 boys.
ADOLESCENCE

• Middle (14-16): increased scope of feelings, peer group values more important; more risk-taking behaviours

• Late (17-19): more confident in opinions, better ability to evaluate risk; may continue with risk-taking behaviour of earlier phase

• Development not the same for every adolescent

• Evaluation necessary for intervention
ADOLESCENCE

Theoretical frameworks:

• Erik Erikson: Psychosocial Stages of Development
• Critical task: Identity formation
• Results from: physical, cognitive, social changes
  PLUS partner and career concerns
• The Identity Crisis: not instability but a turning point
Robert Havighurst: educator, physicist
Highly influential theory of human development
Delineated a number of areas of development in adolescence
- Adjust to a new physical sense of self
- Adjust to new intellectual ability
- Adjust to increased cognitive demands and skills
ADOLESCENCE

- A personal sense of identity
- A vocational identity
- Stable and productive peer relations
- Manage sexuality; have a personal value system
- Develop increased impulse control and behavioural maturity
• Existential Crisis: Psychiatrist Viktor Frankl
• “Saying YES to life in spite of everything” (Man’s Search for Meaning)
• Four key concerns: Death, Freedom, Isolation, Meaninglessness
• Adolescents: Inability to find meaning increases risk of psychopathology and suicide
ADOLESCENCE

• How meaning is achieved in adolescents:
  ➢ Form intimate relationships
  ➢ Establish a stable identity
  ➢ Be creative and productive
  ➢ Set goals
  ➢ Anticipate future possibilities
PHYSICAL MATTERS
PHYSICAL MATTERS

• Body image: shaped by perception, emotion, physical sensation
• Puberty: amplifies body image concerns
• Highly dynamic perceptions of body image in adolescent
• Need to fit in: what is normal, acceptable, attractive
PHYSICAL MATTERS

- Body shapes in the media, influence of social media: “Selfies”
- Normal developmental factors e.g. peer relations, shape body image
- Body image closely linked to self-esteem
PHYSICAL DEVELOPMENT AND HIV
PHYSICAL MATTERS

• Smaller and lower birth weight
• Delays in growth reported in about 50% of adolescents (Lowenthal, 2014)
• Onset of menstruation and pubertal development can be delayed
• Pubertal delay: 2 years (girls), 1 year (boys)
PHYSICAL MATTERS

- Influenced by variety of factors: age at onset, duration, severity
- Early diagnosis and treatment: improvements and even normalisation of growth and puberty
- Social and emotional problems often persist despite resolution
PHYSICAL MATTERS

• Poor growth reported in about 50% of adolescents (Lowenthal, 2014)

• Stunting impacts massively on adolescence

• May be more upset about the actual and perceived delay than HIV itself

• Psychological outcomes: sexual dysphoria (gender identity), anxiety, stigma and discrimination

• Reassure: when Tanner stages at older age but within range of normal variability
PHYSICAL MATTERS

• Support for children with abnormal delay in puberty a recommendation (Mbwile, 2012)

• Dematological abnormalities: plantar warts; herpes zoster, molluscum – stigmatisation
COGNITIVE MATTERS
ADOLESCENCE AND COGNITIVE MATTERS

- Critical period for neural development
- Characterised by cognitive vulnerability
- Changes in structure and functioning of brain
- Refining pathways and connections
- Grey matter: Thinking part of the brain; pruning, extra connections; develops throughout adolescence
- White matter: Involved in learning, processing information
ADOLESCENCE AND COGNITIVE MATTERS

- Pre-frontal cortex: Still under construction
- Only matures well into the 20s
- Organisation and self monitoring ability still developing
- Reward system: highly reactive in adolescents
- Teens need caregivers to provide the brakes whilst their brain develops brakes of its own
ADOLESCENCE AND COGNITIVE MATTERS
ADOLESCENCE AND COGNITIVE MATTERS

- Organization of multiple tasks
- Impulse inhibition
- Self control
- Setting goals and priorities
- Empathizing with others
- Initiating appropriate behavior
- Making sound judgments
- Forming Strategies
- Planning ahead
- Adjusting behavior when situation changes
- Stopping an activity upon completion
- Insight
ADOLESCENCE

- Limbic system (responsible for our emotional life) develops earlier than PFC
- Limbic system: kicks in adolescence: impulse control in frontal lobes not completely mature
- Influences risk and reward
- Peer approval highly rewarding to teen brain
Cognitive Development and HIV
COGNITIVE DEVELOPMENT AND HIV

• Under the cognitive umbrella: language, motor skills, memory executive function, spatial ability, information processing

• Systematic review of studies documenting delay: 80.1% found detrimental cognitive effect of HIV

• Some domains (language and executive function) more affected than others
COGNITIVE DEVELOPMENT AND HIV

• CNS manifestations of HIV subdivided:
  ❖ Indirectly related to effects of HIV on brain: Opportunistic infections
  ❖ Directly attributable to HIV brain infection
• Primary CNS complication is HIV associated neurocognitive disorder (HAND)
• Assessment: cognitive and motor performance on neuropsychological test
COGNITIVE DEVELOPMENT AND HIV

- Persistent evidence of HAND despite ART
- Continue to see mild to moderate neurocognitive impairment
- Asymptomatic neurocognitive impairment (ANI)
- Mild neurocognitive disorder (MND)
- HIV Associated Dementia (HAD)
Asymptomatic neurocognitive impairment (30% of people with HIV)
Mild neurocognitive disorder (20–30% of people with HIV)
HIV-associated dementia (2–8% of people with HIV)
COGNITIVE DEVELOPMENT AND HIV

- HAND: disrupts impulse control and episodic memory
- Consequences for HIV risk behaviours
- Implications for scholastic achievement: poorer outcomes compared to non-positive
- May be further compromised e.g. hearing loss – about 37% in low resource settings (Laughton et al, 2013)
COGNITIVE DEVELOPMENT AND HIV

- Adolescents with mild cognitive impairment need supervision
- Often don’t get it: needs and challenges not appreciated
- Most caregivers are single mothers: over-extended
- Important to understand the challenges faced by their children
ADOLESCENCE AND COGNITIVE MATTERS

• MRI studies: Changes in brain of perinatally infected children: volume changes (Sarma et al, 2013);
• Significantly higher grey matter volume: synaptic pruning of unnecessary connections not happening
• Implications for increased efficiency of neural network; processing & cognition
• Seen in ADHD
• White matter volume reduced: co-ordinates communication between brain regions
MENTAL HEALTH ISSUES
COGNITIVE DEVELOPMENT AND HIV

- Positive adolescents: more subjective distress that uninfected
- Feelings of: helplessness, dysphoria, poor body image, pre-occupation with illness
- HSRC Stigma index: world’s largest study (HSRC 2015)
- 40% internalised stigma: shame/inferiority
- Highest KZN, MPU, FS
COGNITIVE DEVELOPMENT AND HIV

• Various cognitive coping styles employed
  ❖ Denial: As protection from things we don’t want to deal with
  ❖ Reaction formation: Masking feelings; trying to show the opposite is true
  ❖ Self calming: Strategies to deal with strong emotion
  ❖ Distraction: Avoiding root cause of the feelings
  ❖ Acceptance-Resignation: Giving up hope
COGNITIVE DEVELOPMENT AND HIV

- HIV positive adolescents: at greater risk of psychiatric problems
- Prevalence rates range from 51% - 61%
- Most common: depression, anxiety disorders and ADHD
- Problems compounded by psychosocial issues
ADOLESCENCE

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ADOLESCENCE

IS IT ALL GLOOM?
ADOLESCENCE

NOT AT ALL!

- Treatment
- Resilience
- Support
- Understanding
- Opportunity
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