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Psychological and Behavioral changes in women and their relationship to age: A Comprehensive Review

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Abstract:
A woman undergoes several stages during her life, during which she experiences physical changes in her body, particularly during puberty. These changes are the result of the effects of sex hormones, which play a major role in the development of feminine characteristics, such as breast development, a soft voice, and tender skin. On the other hand, these hormones cause psychological and behavioral changes in her, as these hormones increase and decrease during the menstrual cycle and with advancing age. Therefore, this study aimed to study the psychological and behavioral changes of women during the stages of their life, which were divided into six stages, which include: The first stage is the postpartum period, which extends over the first 28 days after birth. The second stage is called childhood and extends until the age of 8 years. The third stage, known as the pre-puberty stage and puberty period, extends between the ages of 8 and 12 years. The fourth stage is called adolescence and extends from 12 to 20 years. The fifth stage is the period of sexual maturity between the ages of 18 and 50 years. The sixth stage is called puberty and old age and extends after the age of fifty.

Keyword: Psychological, behavioral, women, age

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INTRODUCTION

The female body undergoes a wide range of physical and psychological changes throughout her life, many of which are caused by hormonal fluctuations. These changes begin even before birth and continue through puberty, the reproductive years, menopause, and postmenopause[1].The primary hormones involved are estrogen and progesterone, while testosterone and cortisol play smaller but still important roles. Estrogen and progesterone are particularly crucial to the physical and emotional transformations women experience. These hormones affect not only reproductive health but also the entire body-including bones, skin, hair, and emotional well-being. Understanding these hormonal changes is essential for managing health at every stage of life. Hormonal fluctuations also profoundly impact the brain and behavior[2].Women go through several distinct life stages, during which shifts in hormone levels can lead to

psychological changes[3]. These symptoms may manifest as mood swings, anxiety, irritability, or cognitive changes, all related to varying levels of estrogen, progesterone, testosterone, and cortisol throughout the life cycle[4].At the same time, pregnancy brings about significant psychological changes in women, which vary across trimesters and individuals due to hormonal changes, physical changes, social factors, and individual coping mechanisms[5]. Based on the progress, the current study aimed to demonstrate the psychological effects on women during different life stages.

Materials and Methods

Method

Use several websites about behavioral and psychological changes in women and their relationship with age, including Scientific Researcher, Google Scholar, and research published on the Google platform.

Results and Discussion

During their lifetime women experience dramatic fluctuations in the levels of the sexual hormones estradiol, progesterone and also androgens when going through the different stages of life, from menarche to menopause[6]. These fluctuations have a significant impact on the whole body including the central nervous system (CNS) and can be responsible for modifications in behavior, cognition and mood[7].Female sex hormones, particularly estrogen and progesterone, have powerful physiological effects on the nervous system. Numerous studies in humans and animals have demonstrated their influence on women's psychological state[8,9,10].In this article, we will discuss the psychological and behavioral changes in women according to age.

First stage:- Neonatal period (Postpartum first 28 days).

Research conducted within the developmental origins of health and disease framework in turn highlights the persistent effects that early life, both pre- and postnatal environmental factors have on psychological development, through their effects on organs and cells[11,12,13]. Life-cycle model of stress further postulates that brain development shows high plasticity in early life, and early life developmental events may influence psychological well-being and mental health through their persistent effects on the developing brain[14]. Attachment theory suggests that mother–child interaction from infancy onwards sets forth long-lasting effects of psychological development[15], and epigenetic studies have shown the persistent effects of pre- and early postnatal developmental factors on gene expression, and of gene expression changes on later psychosocial well-being[16,17],Hence, research evidence and theories in developmental psychology both highlight the continuity of psychological development, and the persistent effects of genetics and early-life environmental adversities on psychological development. Among early-life environmental adversities, special attention is warranted to the role of maternal depression both during pregnancy and in the postpartum period. Indeed, maternal depression is known to be associated with behavioral and emotional, internalizing and externalizing problems as well as impaired cognitive development in the children[18,19,20,21], although the exact mechanisms underpinning these associations are not yet clear. While it is plausible that genetic and environmental factors through epigenetic processes contribute to this association, other factors have to be taken into consideration as well. For example, maternal negative affect reduces maternal responsiveness, interferes with a healthy and mature mother–baby interaction, and influences parenting style, which in turn dampen the development of the baby's regulatory capacities and may eventually lead to cognitive and psychiatric symptoms[22,23]. Also, it cannot be ignored that maternal negative affect influences maternal perception of child development and behavior, and depressed mothers are more attentive to any emotional or behavioral symptoms, and more likely to perceive their children as difficult, and their development as problematic[18]. While this factor may, therefore, introduce a bias when parental reports are used instead of objective measures to assess child development, the clinical significance of such associations cannot be ignored, because a constant negatively biased perception by a depressed mother can be a risk factor for the future development of her child.

Second stage:- Childhood period (till at the age of 8 years)

A developing body of research suggests that there are few sex differences in the rate and severity of problem behavior in early childhood, but clear sex differences emerge at about 4 years of age. The authors explore 2 hypotheses to further the understanding of emerging sex differences in problem behavior across the first 5 years of life. The first posits that the change in girls' problem behavior from infancy to school entry represents a channeling of early problem

behavior into predominantly internalizing problems as a result of socialization. The second hypothesis is that the change in girls' early problem behavior during the preschool period results from the more rapid biological, cognitive, and social-emotional development of girls relative to boys. The authors review research on the influence of parents, teachers, and peers on girls' behavior from infancy to preschool regarding the first hypothesis, whereas they review studies of sex differences in developmental processes to test the second. They find moderate support for both hypotheses and present a comprehensive theory of girls' developmental psychopathology that integrates social and developmental influences[24].

Third Stage:- Prepuberty and puberty period (between the ages of 8-12 years).

Normal puberty begins with the stimulation of gonadotropin releasing hormone secretion by neurotransmitters in the hypothalamus that receives peripheral signals, such as, gonadotropin and leptin, environmental signals regarding nutritional condition, light, and stress, and signals from nervous system disrupters[25].Puberty initiation age is affected by genetic characteristics, nutritional condition, obesity, environmental hormones, and stress. Recently, the puberty initiation age has reduced due to better nutrition caused by improved living statuses[26].Accordingly, numbers of children with early onset puberty and of patients diagnosed with precocious puberty are increasing[27].Precocious puberty is characterized by conditions wherein secondary sexual developments occur in girls aged less than eight years and boys aged less than nine years. In precocious puberty, girls show breast enlargement, pelvis expansion, hair growth, and commence menstruation[28]. Social interests in precocious puberty is gradually increasing because precocious puberty is known to cause short stature due to early closure of the growth plate[25]. In addition, faster physical development is regarded as bizarre by children of the same age, and it causes teasing problems with peer groups in a stage of immature superego[29].

In addition, a study conducted on patients with early onset normal puberty, reported that self-stress due to a different body shape from the peer group, psychological concerns due to discrepancies between physical and chronological age, and long-term behavioral problems in school, sexual activity, and social adaptation could occur[30]. Studies in female rats have suggested that sex steroids influence the central nervous system differentiation and affect behavior[31,32].However, in another study, it was concluded that precocious puberty patients does not have a severe psychopathology[33].

Fourth Stage:- Adolescence period(between the 12-20 years).

The terms adolescence means ‘growing mature by developing’ and refers to the transition period from childhood to adulthood[34]. This period is dynamic process in which a rapid physical, biochemical, psychological, and social growth, development, and maturation take place. The individual becomes an adult with sexual, physical and psychological development and cognitive and social change[35]. This period starts with the maturation and activation of the hypothalamic-pituitary-gonadal is as a result of coordinated work of complex neuroendocrine mechanisms. It is affected by exposure to environmental factors, interaction between genetic variables, mental factors, nutrition and living conditions. For this reason, the age and duration of adolescence vary greatly from one child to another[36].The adolescence period is a process in which physical, mental, emotional, social, cultural, moral, professional, self-esteem related and identity-related developments ocur[37].Early adolescence is the life phase of physical maturation,but also of other age-related psychological or socio-cultural developments. Each of these developments involves risks and opportunities, and may affect mental health problems. Furthermore, a physical development which is out of pace with same-aged peers may pose an additional challenge. In this present study, we examined which specific emotions and behaviors are associated with pubertal stage, taking into account chronological age and pubertal timing. Studies on psychosocial and psychiatrict problems among adolescents reveal this point. A clinic-social study of psychiatric morbidity among adolescent school going girls age 12-18 years of Delhi (2001) by[38], reveal that 13.76 per cent of girls had psychiatric morbidity, the commonest problem being anxiety/depression (10 per cent). They also found that the primary factors associated with psychiatric morbidity were linked to the girls relationship with parents, the another study that lack of awareness and correct information about psychological changes of adolescence by[39].To the best of our knowledge, to address effects of pubertal status, age, and pubertal timing simultaneously with regard to a comprehensive set of mental health problems.

Fifth Stage:- Sexual maturity period (between the ages of 18-50 years).

During menopausal transition, women are at higher risk of developing depression, stress, anxiety and emotional distress[40]. Several researchers have attempted to examine the reasons why women are more likely to experience greater susceptibility to depression at certain stages throughout their lifetime. More specifically, we can describe precise periods of biological vulnerability in women's lives such as the phases of the menstrual cycle, pregnancy and postpartum, and menopausal transition. There are some windows of vulnerability for depression, or reproductive-related depressive episodes, such as increased sensitivity experienced by some women to changes in hormonal levels that characterize the luteal phase of the cycles, the postpartum period and menopause transition[41]. Depressed mood and sleep problems (insomnia, nighttime awakening or waking early) are likely to be mutually related and must be treated specifically[42].Among the various hormones at play during puberty, estrogen and progesterone stand out for their significant influence on emotional health.Estrogen is often referred to as a 'mood-modulator' for its potent impact on mood and emotional regulation. Its varying levels influence the production and regulation of serotonin, a neurotransmitter that contributes significantly to feelings of well-being and happiness2. In essence, when estrogen levels are optimal, it enhances the effect of serotonin, fostering a positive mood. However, a drop in estrogen, as seen in the latter part of the menstrual cycle, can potentially lead to lower serotonin levels, contributing to mood swings, feelings of irritability, sadness, or anxiety. Progesterone, often thought of as estrogen's counterpart, has a complex relationship with emotional health. While progesterone can have calming effects due to its influence on GABA, a neurotransmitter with a key role in reducing neuronal excitability, an abrupt drop in progesterone levels can also trigger mood swings and exacerbate feelings of anxiety or depression[43]. Increased vulnerability to depression in women begins with puberty and declines after menopause. While the rate of new-onset mood disorders may decline after menopause, women still suffer disproportionately from mood, anxiety, and stress-related disorders into old age. Studies have shown that the perimenopause produces increased vulnerability to both depressive symptoms and new onset depression even among women with no prior history of affective disorders. While the reasons for vulnerability to such disorders in women remain to be fully understood, the strongest candidate is the influence of cycling levels of gonadal steroids on neurotransmitter systems and mood regulatory systems interacting with biological vulnerability and life stress. Alterations in how the brain conducts emotional processing and encodes and retrieves emotional information may be critical to sex and age differences in the incidence, prevalence, and appropriate treatment of emotional and cognitive disorders. The effects of the gonadal steroid estradiol (the predominant circulating estrogen) on emotions are complex and vary according to reproductive life stage[44].Depression risk for women changes across the life span, with higher risk corresponding to life stages in which ovarian hormones fluctuate across the monthly menstrual cycle and to reproductive events, such as parturition and menopause. Ovarian hormones have varied effects in the brain, including modulation of emotional perception, mood regulation, and the stress response, as well as effects on cognition. The concurrence of increased depression risk with the reproductive life phase indicates that ovarian hormone fluctuations may contribute to mood disruption in women. Naturally occurring periods of low estrogen (premenstrually and during late perimenopause) may introduce windows of increased vulnerability to depression through the withdrawal of beneficial modulation of emotional processing and mood regulation[45].

Sixth Stage:- Climacterium and senium (after the age of 50 years)

After the age of 50, women may experience various psychological and behavioral effects due to hormonal changes during menopause and the natural aging process. These can include mood swings, anxiety, depression, cognitive changes like memory problems or "brain fog", and changes in sleep patterns. Additionally, women may experience increased irritability, fatigue, and changes in their sense of self and social roles[46].During menopausal transition, women experience dramatic fluctuations in the levels of the sexual hormones estradiol, progesterone and also androgens, which are potentially responsible for modifications in behavior, cognition, mood and sleep[47]. Postmenopause can bring several psychological effects that impact a woman's mental and emotional well-being. As estrogen levels decline, many women experience mood swings, increased irritability, and a higher risk of anxiety and depression. Sleep disturbances, often due to night sweats or insomnia, can further contribute to fatigue, emotional instability, and difficulty concentrating. Some women report cognitive changes such as forgetfulness or "brain fog," while others struggle with decreased self-esteem or body image concerns due to physical changes

associated with aging. Loss of fertility, shifts in family roles, and societal perceptions of aging may also contribute to feelings of sadness or identity loss. While not all women experience significant psychological distress, those with a history of mental health issues or limited support systems may be more vulnerable. However, regular physical activity, social engagement, and therapeutic support can help manage these changes and promote emotional resilience during this life stage[48].

Conclusion

Across different life stages, women experience significant psychological and behavioral shifts influenced by hormonal, genetic, and environmental factors. From early infancy through postmenopause, these transitions underscore the importance of tailored psychological support and health education for women. Proactive intervention and awareness can foster improved mental well-being and quality of life.

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