Can programmed aging theory adequately explain sexual dysfunction among the elderly?

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Abstract

The belief is widespread that elderly individuals simply become asexual as they age. Consequently, many caregivers and healthcare practitioners implicitly ignore or downplay the sexuality and sexual needs of the elderly. Although it is true that elderly individuals commonly experience sexual dysfunction, which may include a decline in sexual desire, sexual functioning, and ability to engage in sexual activity, most desire to remain sexually active into their older age, and many in fact do. This review examines the extent to which programmed aging theory, which holds that senescence and its associated physiological decline result from genetically predetermined lifespan, can be used to explain and evaluate the development of sexual dysfunction among elderly individuals. Although programmed aging theory usefully accounts for and normalizes inevitable changes in sexual function and ability, it ignores the psychological and psychosocial aspects of aging that affect the onset and extent of sexual dysfunction. Acknowledging these aspects of aging has led to interventions which have proved helpful in maintaining and enhancing sexual activity and wellbeing among the elderly. As the population ages and average lifespans increase, it is necessary that caregivers and healthcare practitioners are equipped to help their patients understand, manage, and adapt to age-related changes in sexual desire, functioning, and wellbeing.

Keywords: programmed aging theory; sexual dysfunction; erectile dysfunction; female sexual dysfunction; sexuality and aging; sexuality and the elderly.

Introduction

It is a commonly-held belief that elderly individuals simply become asexual with age (Willert & Semans, 2000). Consequently, many clinicians, family members, and caregivers ignore or downplay sexuality among the elderly (Kingsberg, 2002). Many individuals experience one or more forms of sexual dysfunction as they age and enter senescence (Camacho & Reyes-Ortiz, 2005). Sexual dysfunction refers to a range of sexual complaints and includes diminished sexual desire, interest, and impaired functioning of the sexual response cycle in both men and women (Laumann, Paik & Rosen, 1999). This review evaluates the extent to which programmed aging theory can explain the development of sexual dysfunction among the elderly. Programmed aging theory holds that aging, senescence, and death are essentially programmed, the result of a genetically predetermined number of cell divisions (Ljubuncic & Reznick, 2009). On this view, the processes of physiological decline associated with aging are natural and inevitable. Programmed aging theory, more so than other accounts,

explains sexual dysfunction as an inevitable part of a natural process. Further, it helps to normalize the decline in sexual functioning many elderly individuals experience. One major downfall of this approach, however, is that its biological focus ignores the psychological and psychosocial aspects of aging, which impact the development and extent of sexual dysfunction and whose acknowledgement is central to many helpful interventions designed to improve the quality of sexual life and wellbeing among the elderly.

Sexuality and sexual dysfunction among the elderly

Sexuality and the desire for physical and emotional intimacy are important aspects of most individuals' lives. The ability to engage in sexual activity and the quality of sexual activity are factors which affect subjective well-being (Albersen, Shindel & Lue, 2009). Aging has a strong impact

on relationship quality and sexual functioning, and most people desire to have a fulfilling sexual life and to remain sexually active across their lifespan (Kingsberg, 2002; Hinchliff & Gott, 2011). As average life expectancy increases, sex and sexuality in later life have become increasingly important. The average woman can now expect to live for 82 years, meaning that she will live approximately one third of her life in a post-menopausal phase (Kingsberg, 2002). As people live longer on average, many will remain sexually active into later life (Willert & Semans 2000).

A long life span, however, is not a guarantee that an individual will remain sexually active in senescence. With age, sexual desire and sexual functioning can decline or become impaired (Hinchliff & Gott, 2011). A national probability sample of 3005 American adults aged 57 to 85 reported that the proportion of sexually active individuals decreased from 83.7% among individuals aged 57 and 64 to 38.5% among those aged 78 and 85 (Lindau, Schumm, Laumann, Levinson, O'Muirheartaigh, & Waite, 2007). As they age, and especially as they enter senescence, many individuals experience difficulties which prevent them from engaging sexual activity or diminish their desire to do so. Many of these difficulties are related to the onset of sexual dysfunction, which encompasses a range of sexual complaints and includes diminished sexual desire and impaired functioning of the sexual response cycle in both men and women (Laumann, Paik & Rosen, 1999). Many of these sexual complaints are also related to or exacerbated by age-related physiological changes and various health problems, including chronic pain, high blood pressure, and cardiovascular disease, in addition to the effects of medications used to treat them (e.g. cholesterol-lowering drugs, cardiovascular medications, and diabetic treatments) (Hinchliff & Gott, 2011). These issues may directly and indirectly affect the quality of individuals' sex lives and their ability or willingness to engage in sexual activity.

The changes in sexual function that occur with age differ between men and women. For men, the primary changes include erectile dysfunction (ED), lowered sperm production, lowered testosterone levels, changes in seminal fluid, reduced frequency and volume of ejaculation, prostatic hyperplasia, decreased penile sensation, and declining libido (Rattan, 2006). ED in particular is strongly associated with age. Among the 1,290 respondents aged 40 to 70 to a sexual activity questionnaire which formed part of the *The Massachusetts Male Aging Study*, the average prevalence of ED was 52% (Feldman, Goldstein, Hatzichristou, Krane, & McKinlay, 1994). Of the men surveyed, 9.6% of participants reported "complete" ED, 25% reported "moderate" ED, and 17.2% reported "minimal" ED. Another, larger survey of 4,489 men aged 30 to 80 found that 19.2% of respondents suffered from ED (Braun, Wassmer, Klotz, Reifenrath, Mathers, & Engelmann, 2000). Of these respondents, 34.4% of men aged 60 to 69 and 53.4% of men aged 70 to 80 reported ED. Both studies found a strong correlation between age and ED and noted the prevalence of ED was also associated with hypertension, arthritis, cigarette smoking,

diabetes, and urinary tract symptoms (Feldman et al., 1994; Braun et al., 2000; Hinchliff & Gott, 2011).

In women, the most common changes in sexual functioning due to aging are hormonal in nature. Cessation of egg production and loss of child-bearing ability with menopause results in decreased estrogen levels, decreased testosterone levels, decreased vaginal lubrication, decreased vaginal expansion during arousal, shrinking of the external genitalia, and shorter and less intense orgasms (Kingsberg, 2002). These physiological changes can negatively impact sexual desire and functioning and contribute to female sexual dysfunction, a term denoting persistent sexual complaints which may include a loss of interest in sexual activity, difficulties in achieving or maintaining arousal—both mental and physical—and inability to reach orgasm (Latif & Diamond, 2013; Wiederman, 2001).

Programmed aging theory and sexual dysfunction

The biological and physiological processes related to aging, including those described above, create systemic changes in the body which result in a progressive and largely inevitable decrease in bodily function (Wiederman, 2001). A good way to understand sexual dysfunction as related to aging is to see it as part of the expected decline in bodily function over time. Programmed aging theory (whose origins owe to the programmed theories of death developed by the nineteenth-century evolutionary biologist August Weissman) asserts that aging, senescence, and death are the inevitable, evolutionary purposeful results of evolved biological mechanisms. On this view, any given lifespan is dependent on a genetically predetermined (or "programmed") amount of cell generations. (Ljubuncic & Reznick, 2009). Aging is therefore explained as being determined by an evolved biological clock, with both the immune system and the endocrine system declining over time.

The immune system provides protection from unhealthy microorganisms and damaging cell alterations by generating antibodies which react with the proteins of foreign antigens to engulf and digest them (Cavanaugh, Blanchard-Fields, & Norris, 2008). Over the course of aging, immune function gradually declines, antibodies become less effective, and body's capacity to distinguish between foreign antigens and necessary cells declines, which variously can contribute to conditions such as cancer, diabetes, and heart disease (Gavrilova, Severin, & Skulachev, 2012). Declining immunity can have a negative impact on sexual function. Even if a man has a normal amount of testosterone, for example, a firm erection may not be achievable (Willert & Semans, 2000). Moreover, as the body becomes more susceptible to infection, many men require medications which may affect their sexual functioning. Some medications, for instance, cause or exacerbate erectile dysfunction by affecting the blood vessels and nerves involved in maintaining an erection (Koxahn, 2002).

Further, programmed aging theory also focuses on the decline of the endocrine system with age, a decline which impacts sexual health and functioning (Rattan, 2006). Decreased endocrine function entails a change in hormone levels, especially in those that play an important role in sexual desire and sexual performance (Rattan, 2006). In men, hormone level changes affect sexual desire and performance because of a reduction in testosterone (Willert & Semans, 2000). On the other hand, women may experience changes in their sexual desire and pleasure as a result of declining estrogen and testosterone (Kingsberg, 2002). For example, low estrogen levels are known to cause dyspareunia, or increased pain during sexual performance, as well as vaginismus, or involuntary vaginal contractions from decreased vaginal lubrication (Kingsberg, 2002). Libido and quality of sexual experience have also been shown to decline with decreased estrogen levels in women (Willert & Semans, 2000).

While programmed aging theory can help account aspects of the aging process and may aid in understanding why sexual functioning may decline over the years, it has been criticized for attributing aging exclusively to biological inevitability while understating or underestimating environmental factors. In this respect, programmed aging theory differs from other theories of aging, including random (or damage-based) aging theory and free radical theory (Rattan, 2006). Random or damage-based aging theory focuses on the gradual accumulation of damage to cells and tissues over time, thereby according more of a role than programmed aging theory to environmental factors. This approach to explaining sexual dysfunction is more amenable to accounts that stress the role and adjustment of environmental, lifestyle, and psychological factors. On this account, sexual functioning in older age can be influenced by diet, exercise, managing mental wellbeing, marital status and satisfaction, and social relationships (Moore, 2010). According to the free radical theory of aging, age-related decline in physiological function is the result of gradual damage and oxidative stress caused over time by free radicals (Rattan, 2006). Environmental factors implicated in this process, such as smoking, sunlight exposure, pollution, radiation, and diets high in food preservatives, may also contribute to sexual dysfunction with age. For example, damage to the inner wall of blood vessels by free radicals can cause the formation of cholesterol in the blood vessel wall and atherosclerotic plaques which inhibit proper blood vessel dilation, ultimately narrowing the vessels and negatively affecting blood flow (Kloner & Speakman, 2002). Erectile dysfunction then results because vessels cannot supply adequate blood flow to the penis (Kloner & Speakman, 2002).

However, because programmed aging theory only considers biological processes in explaining the decline of sexual functioning, it fails to account for the psychological and psychosocial aspects of aging and the psychological impacts of the age-related physical changes individuals experience in their sexual health and functioning. While

physiological changes underly most of the complaints characteristic of sexual dysfunction, they do not account for the extent of the dysfunction, which also has psychosocial bases (Willert & Semans, 2000). For example, some individuals may be overwhelmed by the physiological changes of aging to the extent that they develop a permanent uncertainty about their sexual functioning, which may decrease their capacity or willingness to engage in sexual activity. Moreover, individuals' misunderstanding of their sexual capacity can both decrease their levels of satisfaction and increase stress reactions (Kingsberg, 2002). Some elderly individuals expect implicitly that their sexual activity and ability will remain unaffected as they age (Willert & Semans, 2000). The outcomes may include increased stress from lessened sexual performance as well as shame and frustration (Kingsberg, 2002).

In women particularly, aging may also bring with it an increase in self-dislike and subjective dissatisfaction due to changes in body image and anxiety about whether they can still meet societal expectations of having an attractive appearance (Willert & Semans, 2000). A lack of self-confidence can discourage older women from engaging in sexual activity and may promote a dislike of it. In turn, these factors may impact sexual desire, arousal (mental and physical), and ability to achieve orgasm. Programmed aging theory, as it stresses a purely biological account of sexual dysfunction, does not adequately consider the important psychological impacts of aging on sexuality.

Although programmed aging theory offers a helpful way of conceptualizing aging and the age-related onset of sexual dysfunction, it does not account for the role of psychological and psychosocial factors in the development and extent of sexual dysfunction among the elderly. These factors play an important role in exacerbating the sexual complaints that commonly affect elderly individuals. For example, a lack of information or openness about sex affects the ability of sexual partners to adapt to age-related or illness-related changes in sexual desire, performance and experience (Hinchliff & Gott, 2011). Additionally, psychosocial factors can have a negative impact on sexual functioning and the acceptance of treatment. For instance, cultural stereotypes and subjective dissatisfaction prevent some individuals from discussing sexual dysfunction with healthcare practitioners or seeking help (Hinchliff & Gott, 2011; Scherrer, 2009; Wiederman, 2001; Willert & Semans, 2000). Elderly individuals may also have difficulty accepting bodily changes and coping not only with the physiological aspects of aging, but also depression, a lack of privacy, or lack or loss of a partner (Willert & Semans, 2000).

Managing sexual dysfunction in senescence

While different theories of aging account differently for process of age-related physiological decline and its causes, all theories agree on a basic level that aging is a more or less

inevitable process which is frequently accompanied by the onset of some level of sexual dysfunction. Theories of aging can allow elderly individuals and the practitioners and researchers who seek to assist them to understand the biological, psychological, and environmental changes that accompany older age. Programmed aging theory, however, uniquely minimizes the role of environmental factors in aging processes and therefore, in the case of sexual dysfunction, lends itself more to dealing with inevitable sexual changes rather than trying to prevent them. In this respect, viewing aging and sexuality through the lens of programmed aging theory does have the benefit of removing the blame from aging (for it presumes that some degree of age-related sexual dysfunction is more inevitable than preventable). This view would suggest that rather than trying to delay the impacts of aging, elderly individuals might instead adapt and accommodate these inevitable changes and turn to potential strategies to help maintain or enhance sexual functioning.

New medications and a number of promising treatments have become available to help elderly individuals maintain sexual functioning and wellbeing in the face of physical decline (Albersen et al., 2009). For aging men, pharmaceutical treatments may help with erectile dysfunction. Sildenafil (sold as Viagra), for instance, has proven 60-80% effective in helping men who experience erectile dysfunction achieve erection (Willert & Semans, 2000). Topical creams which serve as smooth muscle relaxants and vasodilators can also be beneficial to those with erectile dysfunction (Wiederman, 2001). In addition, mechanical devices such as vacuum constrictors are a popular treatment option for erectile dysfunction and can be helpful in promoting blood flow and reducing the effects of erectile dysfunction. Other treatments for elderly men who experience some form of sexual dysfunction include the use of testosterone supplements, which can help boost libido (Albersen et al., 2009). For aging women, hormone replacement therapy can sometimes boost libido and increase vaginal lubrication (Kingsberg, 2002). Women may also opt to use a personal lubricant to help with vaginal dryness and help prevent pain during intercourse (Willert & Semans, 2000). Another valuable treatment option is psychosexual counselling, an effective approach for addressing and managing the social and psychological aspects and contributing causes of sexual dysfunction (Wiederman, 2001). Skill building can teach elderly couples ways of defining or expressing sexuality outside of or in addition to penile-vaginal intercourse, including kissing, touching, stroking, or holding hands. Finally, sexual education programs that normalize changes associated with aging and emphasize communication skills and behavioural changes can help individuals realize that changes in their sexual desire, ability, or functioning are normal and can be accommodated within their sexual lives.

While there are several strategies for improving sexual life for aging individuals, some strategies may exert negative impacts on their relationships. Viagra, for example, is one of

the most common and effective treatment options for men who experience erectile dysfunction. Although Viagra may be beneficial in allowing aging men or couples to remain sexually active, some women are affected negatively when their partners use Viagra (Gavey, Grace, & Vares, 2003). Using Viagra often leads to increased frequency and duration of penile-vaginal intercourse, which may be unwelcome for some women (Gavey et al., 2003). Prolonged vaginal-penile intercourse is not always desirable to women because they may experience pain and discomfort with extensive or repeated intercourse, especially postmenopausal women who experience reduced vaginal lubrication (Barnett, Robleda, & Pachana, 2012). In addition, men who use Viagra may focus primarily on vaginal-penile intercourse, leading them to spend less time on other pleasurable activities, including foreplay, touching, kissing, and alternative forms of genital stimulation (Barnett et al., 2012; Gavey et al., 2003). Another possible problem can be the absence of joint decision-making about Viagra use (Gavey et al., 2003). For women, negotiating about sex after a male partner has taken Viagra may be a significant issue, as not all women are in an equal position to say "no" (Gavey et al., 2003). This is especially true for women in traditional marriages in which providing sex is seen as among the wife's duties (Gavey et al., 2003). Since Viagra increases men's erectile capacity, its use can also cause worry and concern for women about infidelity and health-related concerns such as the potentially increased risk of heart attack during or after sex (Gavey et al., 2003).

Conclusion

With an aging population, clinicians, nurses, and other staff working with elderly individuals should take the time to become sensitive to the sexual needs and concerns of the individuals with whom they work. The treatment or management of some of the sexual limitations that come with aging offers a readily available means of enhancing sexual experience for an increasingly long-lived population. Elderly individuals do not simply or uniformly become asexual with age, though they often experience some form of sexual dysfunction. Programmed aging theory helps to normalize this age-related onset of sexual dysfunction. Recent research has not applied the framework of programmed aging theory to sexual health and wellbeing. Further, there has been no attempt to coordinate this theory with forms of psychological treatment, since programmed aging theory has limited applicability to psychosocial interventions because of its purely biological emphasis. Education and normalization are important in helping elderly individuals understand age-related decline in physiological processes and its consequences for sexual functioning and wellbeing. A main shortcoming of programmed aging theory as an approach to understanding age-related decline in sexual functioning and health is that it ignores or downplays many of the psychosocial aspects of aging and the impacts they exert on

sexual wellbeing. Many interventions which may be helpful in managing sexual dysfunction, such as psychosexual counselling, require that all its underlying causes and contributing factors, physiological, psychological, and social, be addressed.

Sexuality is an important aspect of most individuals' lives, and remains so for many as they age. With an aging population and increasingly longer lifespans, it is imperative that caregivers and healthcare professionals are properly equipped to appreciate this and to help elderly individuals understand and manage their sexual health and wellbeing as it changes with age. Approaches to understanding and treating sexual dysfunction can be informed by programmed aging theory, which provides an explanation of how and why aging occurs and removes the blame from aging and the decline of sexual functioning: on this view, sexual dysfunction is not something which could have been entirely prevented if an individual had better attended to environmental factors. However, such a view should be considered in conjunction with perspectives that emphasize the psychological and social dimensions of aging and their impact on sexual functioning and wellbeing. Such an approach would promote education and communication about aging and its effects as well as provide a means for adjusting to the changes that take place.

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