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## Guest Editorial for AJGP on Sexual Functions

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The aging population (aged 65 years and older) in the United States accounts for approximately 13% of the total population and, based on scientific projections, by 2030, will account for 18% of the total U.S. population. Fifteen years from now, more than 72 million individuals will be above the age of 65 (US Census 2010). The aging of the general population is not unique to the United States. The United Nations Department of Economic and Social Affairs estimates that by 2050, those aged 60 years or over will make up about 21% of the total global population (UN World Population Ageing 2013). Furthermore, aging is happening within the older population itself and by 2050, 19% of the total global population will be above the age of 80.

As the population ages, it is also projected that there will be change in the ratio of males to females. In 2013, the ratio of males to females in the U.S. population 60 years old or older was 76:100. By 2050 this ratio is projected to be 87 to 100. This slow rebalancing between the sexes is due to increased life expectancy and improved healthcare. Regarding marital status, recent research revealed that among those aged 60 and over, 80% of men were married while approximately 50% of women were married. These statistics, as well as others not cited, clearly indicate the need for significantly increased efforts to explore and to examine more thoroughly the uniqueness of this group in regards to changes or stability in their physiology, social interactions, physical and cognitive function, mental and emotional wellbeing, and self-perceptions of health.

One of the least understood and explored aspects of aging is that of sexuality (Lindau et al.). There are likely many reasons for this. Two prominent ones are the perception that older adults no longer value sexual activity and that age related changes to their physiology and cognitive functioning naturally lead to sexual dysfunction and a decreased desire for sexual intimacy (Rheume et al.). Although these beliefs hold in the public consciousness and often are propagated by the media, nothing could be further from the truth. As the population ages across the globe, it is becoming more and more evident that sexuality, sexual functioning, and need for intimacy continue to be important across the life span. The observations that the majority of older adults are still married, that a significant minority of older adults may have "friends with benefits," and that older adults are living longer would indicate that sexual activity will continue to play a significant role in the lives of the aging population. Additionally, as the population ages, we are witnessing a growing

commercial interest in helping older adults maintain their youth, health, vitality and sexual activity. The reality of this is confirmed by simply turning on the TV and watching the frequent advertisements for medications for erectile dysfunction, testosterone supplements, beauty and youth products, hormone replacement and vitamin treatments for the older adult. Despite the heightened importance being placed on sexuality in older adults, scholarly activity in this area remains relatively rare.

This issue of American Journal of Geriatric Psychiatry, which presents four articles that focus on sexual issues in later life, is a welcome addition to the scientific literature in this area. As the aging of the population is a national and global phenomenon, two of these studies explore populations in the U.S. (San Diego, California and Baltimore, Maryland) while the others present data from Western Australia and the Netherlands. The articles form natural pairs. Two of the articles explore sexual activity and sexual health in relation to depressive symptoms (Wang et al. and Almeida et al. respectively) and the other two examine the relationship of sexual functioning and sex hormone changes to cognitive functioning (Hartmans et al. and Takayanagi et al., respectively). The two pairs of articles are presented in parallel. One article in each pair looks at both genders while the other focuses only on males. Although the number of aging males is increasing in proportion to females, research on the sexuality of aging males and aging females deserves equal time and attention and we expect that over time this balance will be achieved.

The first thing to ask in regards to the aging population and sexual activity is whether or not sex is common in the older individuals who are identified as having successfully aged. To this end, Wang et al. from University of California, San Diego, examined the sexual activity of partnered subjects in the Successful Aging Evaluation (SAGE) study. This study used a structured multi-cohort design to examine over 1000 community-dwelling individuals between the ages of 50-99. One of the SAGE study's goals was to examine the factors that can or are contributing to the older individuals' well-being and sense of being successfully aged. Wang et al. examined partnered individuals' (N=606) responses to the Quality of Sexual Life Questionnaire (QSLQ) in relation to their responses to questions regarding depressive symptoms (using the Patient Health Questionnaire 9-Item, PHQ-9), anxiety symptoms (using the Brief Symptom Inventory), Perceived Stress Scale, and physical functioning (using the Physical Functioning Composite of the Medical Outcomes Study 36-item Short Form). In stark contrast to the misperceptions about sexual activity in the aging population, they found that over 80% of respondents had sex in the past year and over 70% were sexually active on a weekly basis. Furthermore, over 60% were somewhat or very satisfied with their sexual activities. Wang and her colleagues did not find any difference between the sexes in regards to self-reported satisfaction in their sexual lives with the exception that women reported a greater frequency of rejections of sexual overtures. While older age was associated with lower frequency of sexual activity, lower desire for and more frequent dysfunction in sexual activity, they did not find any relationship between older age and sexual satisfaction. Wang et al. also found that only depressive symptoms were negatively related to sexual health but not anxiety or stress. Therefore, Wang and her colleagues recommend sexual health screening for aging adults who report depressive symptoms.

Other authors have found interest in examining the impact of depressive symptoms on sexual health. Almeida et al. from the University of Western Australia, examined the relationship between clinically significant depressive symptoms, basic and instrumental activities of daily living, and sexual interest and practice in men above the age of 80. This study assumed that sexual activity is just another aspect of routine functioning of older adults, on par with other activities of daily living. The authors used a sample from the Health In Men Study (HIMS) which had a final participant number of 3274 with 1649 above the age of 80. Almeida et al. used this group's responses to the PHQ-9 to quantify depressive symptoms. For examination of sexual activities, the study asked about sexual history over the participant's lifetime as well as over the past 12 months. These authors also measured sexual dysfunction and interest level in sex. While this study was also cross-sectional in nature, like the Wang et al. study, it included only men aged 80 years and above. Almeida and colleagues found that among the oldest old, interest in sex is low and is further decreased by subthreshold depression. What they also found was that depressive symptoms seem to impact negatively basic and instrumental activities of daily living but not sexual practice, possibly because in this oldest old group, sex may not play a prominent role in mental wellbeing. It would be interesting if this subpopulation of oldest old can be replicated in the SAGE study population.

The two other articles in this issue that deal with sexual functioning focus on cognitive functioning and its potential relationship to sexual function. Hartmans et al. looked at the relationship between cognitive functioning and self-perception of sexuality in old age. They utilized Longitudinal Aging Study Amsterdam (LASA) in the Netherlands from which 1908 male and female subjects with a mean age of 71 years were examined. The following cognitive functioning domains were assessed: general cognitive functioning, memory performance, processing speed and fluid intelligence. These measures of cognitive function were compared to respondents' answers to questions related to perception of importance of current sexuality and sexual life, opinion about sexuality in general, and current need for intimacy and touch. They report that a significant proportion of study subjects reported the importance of sexuality in older age. In this context, their data revealed that those with higher cognitive functioning have better self-perception on current sexuality and those who report satisfaction with current sexual life have better cognitive functioning overall. Although the study design did not provide information about the causative relationship between cognitive functioning and sexuality, it clearly demonstrated the relevance of an interaction between them.

The final paper looks at the impact of testosterone and metabolic parameters on the cognitive functions of older men. Just like the Almeida et al.'s paper, Takayanagi et al. examined men only. They studied 112 men with mean age of 61.3 years from the Baltimore Epidemiologic Catchment Area Follow-Up Study. Unlike other studies described in this special issue, Takayanagi et al. examined the potential interaction between biological markers of serum sex hormone binding globulin (SHBG) and body mass index (BMI) with cognitive functioning. As testosterone level falls in aging, these authors describe the potential impact of this on cognitive functioning and, unlike the other papers presented here, they did not seek subjective assessment of sexuality or sexual function but examined known sex hormone's impact on cognition. The authors identified an inverse relationship between SHBG and verbal memory scores, and a direct relationship between BMI and better

immediate and delayed verbal memory performance. The direct relationship between BMI and cognitive functioning is in contrast to other reports that show the opposite. The interesting aspect of the study is that perhaps there is a biological relationship between sex hormones and cognitive functioning and taken together with other reports presented here, it may indicate a biological rationale for changes in hormones impacting the cognitive ability to appreciate sexual experiences in aging.

We believe that these articles should act as a stimulus for encouraging more work in this area. These studies inspire interesting questions that will be important to explore in the coming years. Several areas immediately come to mind. First of all, the articles focus on heterosexuality as the primary sexual preference of the subjects. We have relatively poor understanding of the aging homosexual population's experiences and we know even less about sexuality in aging populations of other sexual minorities. Life expectancy for members of same sex couples are the same as their heterosexual counterparts and even those with HIV infection are living virtually the same number of years as those not infected with HIV (Samji et al.). It will be important to explore further sexuality related issues for these sexual minority populations as well.

Research is also needed regarding the rising rate of sexually transmitted diseases (STDs), including HIV, in older adults. Schick et al. (2010) found that most men over 50 do have sex with a partner but almost 22.5 % reported that their most recent sex was with a "friend" or "new acquaintance." For women over 50 years, 13.5 % reported that their most recent sexual experience was with a "friend" or "new acquaintance." According to data from the National Survey of Sexual Health and Behavior (NSSHB, 2010), for individuals 61 years-old and older, the percent of the past 10 vaginal intercourse acts that included condom use for men was 5.1% and for women 7.4%. A recently launched public service advertising campaign targeting older individuals (SafeSexforSeniors.org) includes the tag line "There are many ways to do it. There is only one way to do it safely. Use a condom." Is this campaign succeeding? What are the most effective ways to educate older individuals about safe sex practices?

Yet another area in need of research is how best to help healthcare practitioners of all types become more comfortable and more adept at asking older individuals about their sexuality. In 2007, Lindau et al. reported that since turning age 50 only 38% of the men and 22% of the women who she had her colleagues studied (N=3005) had discussed sex with their physician. Not asking an older patient about his or her sex life may be a missed opportunity to help an older individual avoid an STD as well as a missed opportunity to help improve life quality.

Aging men are using testosterone and other hormonal replacement commercial products and prescriptions at increasing rates. The relative risks and benefits of hormone replacement therapy (HRT) for older women, especially in regards to libido and maintenance of sexual quality of life, is still not completely understood. Trans men and women are also taking sex hormones. Biomarker studies will be important to explore the potential impact of this rising therapeutic use of sex hormones with emphasis on the immediate and longer-term benefits and consequences.

Additionally, causal relationship between sexual function and depressive symptoms need further exploration. It is not clear if depressive symptoms lead to sexual dysfunction or decreased interest or if emerging sexual dysfunction and decreased intimacy contribute to depressive symptoms. Furthermore, most of the studies on this topic are cross-sectional in nature. It would be of great value to observe scientifically longitudinal change in sexual functioning and its relationship to mood and cognitive changes over time as older adults age. As the population across the globe is aging, cultural aspects of sexuality in aging need attention. Differences between cultural norms and expectations of sexuality in older adults are not yet well understood and the absence of this understanding negatively impacts the quality of healthcare which older members of these cultures receive. If sexual function is to be used as a screening mechanism for possible mild depressive symptoms or cognitive decline, it would be helpful to know if, when and how questions related to sexual intimacy should be approached in different cultural contexts.

As the world population continues to age, sexuality and sexual functioning will be an increasingly important area of study. Contrary to ageistic beliefs, as a central aspect of being human, our appetite for sexual intimacy does not necessarily end as we age no more than our appetite for other things like food. Intimacy of all types, including sexual intimacy, remains important for many older adults. In order to help the older individuals among us age in the most successful way possible, this rich area of research should be encouraged in the years to come. We hope that the four articles related to sexuality in later life included in this volume are part of a steadily expanding body of scientific research which will benefit the older individuals we have dedicated our careers to helping.

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