#### **EPIDEMIOLOGY & RISK FACTORS**

# Sensory Dysfunction and Sexuality in the U.S. Population of Older Adults



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#### **ABSTRACT**

**Background:** The sexual experience is shaped by sensory function; with aging, sensory dysfunction may interfere with sexuality and sexual behavior between partners. Specifically, older adults with age-related sensory dysfunction may have less sexual activity than those with better sensory function. In addition, since sexual desire and attraction rests in part upon sensory function, sensory dysfunction may also be associated with less sexual motivation.

Aim: To test the association between sexual activity and motivation in older adults and their sensory dysfunction.

**Methods:** Sensory dysfunction was measured both by global sensory impairment (a validated measure of dysfunction shared among the 5 classic senses: olfaction, vision, taste, touch, hearing) and by total sensory burden (cumulative sensory loss). Sexual activity was quantified by frequency and type of sexual behavior. Sexual motivation was measured by the frequency of sexual ideation and the importance of sex to the respondent. We used cross-sectional data from a nationally representative sample of community-dwelling older adults (aged 57-85 years) in the United States (National Social Life, Health, and Aging Project, N=3,005) in logistic regression analyses.

**Outcomes:** Sexual activity, sexual motivation, and satisfaction with the sexual relationship were self-reported. **Results:** Older adults with sensory dysfunction were less likely to be sexually active—an association that persisted when accounting for other factors that also affected sexual activity (age, gender, partnered status, mental and physical health, and relationship satisfaction). Nonetheless, sensory dysfunction did not impair sexual motivation, nor affect the physical and emotional satisfaction with the sexual relationship. Among currently sexually active older adults, sensory dysfunction did not affect the frequency of sex or the type of sexual activity (foreplay, vaginal intercourse, or oral sex). These results were the same for 2 different measures of sensory dysfunction.

Clinical Translation: This is the first nationally representative study of sexuality and multisensory dysfunction in community-dwelling older adults. 4 of the 5 classic senses were measured with objective tests, and hearing was rated by interviewers in the context of their conversation. Medical and health care interventions that can reduce the burden of sensory dysfunction may improve older adults' sexual experience.

Conclusions: Sensory dysfunction is associated with sexual inactivity, but not with sexual motivation. Among those who are sexually active, sensory dysfunction did not interfere with sexual expression. Improving the sexual experience of older adults requires a focus on sensory dysfunction as an impediment to sexual activity given that older adults remain sexually motivated. Zhong S, Pinto JM, Wroblewski KE, et al. Sensory Dysfunction and Sexuality in the U.S. Population of Older Adults. J Sex Med 2018;15:502—509.

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Key Words: Sensory Dysfunction; Sensory Loss; Aging; Sexual Activity; Sexual Motivation

Received November 30, 2017. Accepted January 24, 2018.

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https://doi.org/10.1016/j.jsxm.2018.01.021

#### INTRODUCTION

Older adults continue to enjoy regular sex, and for many, sexual activity remains an important component of their lives. However, increasing age is associated with less sexual activity and more sexual dysfunctions. He is widely accepted that poor physical and mental health, chronic illness, lack of an available sexual partner, and relationship unhappiness are all associated with sexual inactivity and sexual dysfunction among older adults, he is known about how age-related decline across all of the classic senses is associated with sexuality even though multisensory loss is prevalent among older adults in the United States and sensory information is important for human sexuality. Le-18

Previous empirical studies have demonstrated that sensory information from each of the 5 classic senses (olfaction, vision, taste, touch, and hearing) shapes sexual motivation <sup>12–15</sup> as well as sexual activity. <sup>10,16</sup> In addition, sensory impairment can negatively affect quality of life, <sup>19–21</sup> as well as marital quality and a partner's well-being <sup>22</sup>; sensory impairment is also associated with more depressive symptoms. <sup>23</sup> All of these factors can lead to sexual inactivity. Indeed, a large survey of a retirement community in Florida found that both hearing loss and vision loss were associated with sexual inactivity, <sup>10</sup> while in a study of clinical patients with olfactory dysfunction, Gudziol and colleagues <sup>16</sup> suggested that depression from olfactory loss may be associated with sexual inactivity.

However, these empirical studies have only looked at the role or function of 1 or at most 2 sensory modalities at a time and have not considered the effects of multisensory loss on sexual motivation and sexual activity. Studies that focus on the impairment of 1 type of sensory modality fail to recognize that sexuality is shaped by stimuli from each of the senses, <sup>12–15</sup> that there are gender differences with respect to the use of sensory information, <sup>12</sup> that individuals may vary in their responsiveness to different types of sexual stimuli, <sup>18,24–26</sup> and that the combination of sensory information can synergistically enhance sexual desire and arousal. <sup>27</sup> Therefore, it is important to consider how *multisensory dysfunction* (impairment of more than 1 of the 5 classic senses) matters for human sexuality.

A significant proportion of older adults in the United States have multisensory loss, which is likely driven by a shared mechanism of physiological and neurological decline. Given that sensory information undergirds human sexuality and that sensory function declines with age, it is important to understand whether there is an association between comprehensive sensory dysfunction and multiple aspects of sexuality to mitigate the effects of sensory burden on older adults' sexuality.

We hypothesize that multisensory dysfunction is associated with sexual inactivity and decreased sexual motivation among older adults. To test our hypotheses, we use publicly available data from the National Social Life, Health, and Aging Project (NSHAP).<sup>28</sup>

#### **METHODS**

#### Study Population

NSHAP is a nationally representative study of the health and social relationships of older adults in the United States. In 2005–2006, trained interviewers conducted in-home interviews with community-dwelling older adults (aged 57–85 years) that resulted in a sample of 3,005 respondents. The design of the sampling frame, oversampling of smaller demographic groups, and establishing of the characteristics of both respondents and non-respondents enabled algorithms to weight the raw data (the weights account for differential probability of selection and non-response by age, gender, and race/ethnicity), and thereby describe characteristics of the U.S. population born between 1920 and 1947.<sup>29</sup> The interviewer administered an in-home questionnaire that collected demographic, social, psychological, and biological measures that also included objective measures of sensory function.<sup>29,30</sup>

The institutional review boards of the National Opinion Research Center and University of Chicago approved the study, and all respondents provided written informed consent.

#### DATA

#### Sensory Variables

NSHAP tested olfactory, gustatory, tactile, and visual function; auditory function was rated by the interviewer after the 2-hour interview.<sup>30</sup> Olfactory function was measured by testing odor identification using felt-tip pens impregnated with odorants.<sup>31</sup> Filter papers with sour, bitter, sweet, and salty taste were administered to respondents to measure gustatory function.<sup>30</sup> Tactile function was assessed using the 2-point discrimination test to measure the finger's sensitivity to touch.<sup>30</sup> Visual acuity was assessed using a distance chart.<sup>30</sup> Trained interviewers were asked to rate the respondents' auditory function during the 2-hour interview in the home.<sup>30</sup> All 5 measures were used to construct our multisensory dysfunction variables.

The 2 independent variables in our study were the global sensory impairment (GSI) score and the total sensory burden score. Correia and colleagues<sup>11</sup> have demonstrated that GSI can be considered a measure of a mechanism of sensory decline shared among the 5 classic senses. Using this measure allows us to test the possibility that a shared neural or physiological process underlying all sensory decline shapes sexuality within older adults.

The GSI score is based on a single-factor model fit to observed measures of dysfunction across all 5 senses. The GSI score was derived from this model using empirical Bayes mean predictions of the latent variable.<sup>11</sup> Higher GSI scores indicate greater

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