

## ORIGINAL RESEARCH

# Longitudinal Evaluation of Sexual Function in a Cohort of Pre- and Postmenopausal Women

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## ABSTRACT

**Introduction.** Aspects of women's sexual functioning that have received relatively little attention are its stability and how changes in the different sexual response domains influence each other over time.

**Aim.** The aim of this study was to describe the changes and to evaluate the stability of self-reported sexual functioning over a 4-year period in a population sample of British women.

**Methods.** A 4-year follow-up study on N = 507 women, including 178 pre- and 329 postmenopausal women, was conducted. The validated Female Sexual Function Index (FSFI) was applied.

**Main Outcome Measure.** A multigroup path analytical model was used to examine autoregressive effects (the effect of a domain on itself at a later point in time) and cross-lag effects (one variable affecting another variable at a later point in time) across all FSFI domains of sexual functioning between pre- and postmenopausal women.

**Results.** Overall, the proportion of postmenopausal women suffering from a sexual dysfunction at measurement point 1 (T1) was higher compared with premenopausal women (pre: 34.3% vs. post: 14.5%). However, both groups showed a comparable number of women developing a sexual problem (pre: 22.2% vs. post: 23.2%) or improving their sexual functioning (7.4% vs. 7.6%) after the 4 years. Furthermore, path model analyses revealed that each domain at T1 significantly predicted its level 4 years later ( $\beta$ s ranging from 0.33 for arousal to 0.57 for lubrication), with the exception of sexual satisfaction. In terms of cross-lag effects, the changes in all domains except for pain were predicted either by levels of desire, arousal, or orgasm at T1 ( $\beta$ s ranging from 0.18 to 0.36) in both groups.

**Conclusions.** Women's sexual functioning was moderately stable across the 4 years. The main predictors of changes in sexual functioning and satisfaction were desire and arousal, highlighting their role as possible key players in women's sexual health. **Burri A, Hilpert P, and Spector T. Longitudinal evaluation of sexual function in a cohort of pre- and postmenopausal women. J Sex Med 2015;12:1427–1435.**

**Key Words.** Longitudinal Study; FSD; Sexual Functioning; Women; Cross-Lag; FSFI

## Introduction

Previous research has highlighted the importance of a healthy sex life for the overall quality of life [1,2]. Female sexual function is thought to be composed of a cluster of domains including desire, subjective and genital arousal (i.e., lubrication), orgasm, satisfaction, and pain. Two aspects of women's sexual functioning that have received rela-

tively little attention are its stability or variation and how changes in the sexual function domains affect each other over time. While considerable research effort is being made in understanding the epidemiology of women's sexual problems by concentrating on the identification of potential risk factors, most studies have used and continue using cross-sectional designs (e.g., Burri and Spector [3] and Shifren et al. [4]). While these cross-sectional

studies show a decrease in female sexual function as age increases, there is limited follow-up data available illustrating how the various sexual function domains track together over time. But longitudinal studies in the field of female sexual health are urgently needed to test for overall trends, as well as for temporal changes in sexual function over time, and for the factors modifying these variables (i.e., causation). There are only sparse data on sex and aging longitudinally [5–7]. In addition, there is a lack of multidimensional studies focusing on all the domains of sexual function, consequently preventing exploration of their interactions over time.

The majority of the existing follow-up studies have addressed the disruptive effects of chronic illnesses and cancer conditions on women's sexual health by investigating the incidence of sexual problems, the nature of the sexual impairment, as well as posttreatment changes in sexual functioning (e.g., Andersen [8]). Population-based studies are rather scarce and have almost exclusively looked at sexual function and related distress in peri-menopausal women [5,7]. The process of aging and menopausal transition is accompanied by a range of physiological and psychological changes, such as the decrease in estrogen levels, the development of comorbid cardiovascular and metabolic conditions, etc. that all have the potential to affect a woman's sexual function [9].

Overall, these previous studies report a decline in all phases of the sexual response, as well as higher levels of sexual distress as a consequence of aging and/or menopause [5–7,10]. In an 11-year prospective study on 257 mid-aged Australian-born women, for example, a decline in all domains of sexual function after the decade studied could be observed [5]. In another seminal prospective cohort study of 3,302 U.S. women (aged 42 to 52 years) as part of the Study of Women's Health Across the Nation (SWAN), Avis and colleagues found a decrease in sexual desire and an increase in painful intercourse during peri-menopause, with these changes being independent of chronological aging and likely related to menopausal changes [7]. Similarly, the Melbourne Women's Midlife Health Project found greater declines in sexual functioning among 197 women who transitioned from pre- to postmenopause compared with women who remained premenopausal [11]. A very recent follow-up study in an Australian cohort of 230 postmenopausal women from the Women's Healthy Ageing Project found 49.8% of women reporting being sexually active after a 10-year follow-up, with more active women also reporting

significantly higher levels of sexual distress [6]. However, women maintaining sexual activity showed stability in sexual functioning, whereas inactive women reported an overall decline. The most important predictors for sexual activity were partner availability and no history of depression. While overall the majority of studies suggest an increase in sexual distress, there are some conflicting data. In an earlier longitudinal study exploring sexual behavior and dysfunction in a population sample of 474 older urban Australian women, younger women and women with partners were found to have higher levels of distress than older women [10]. Women further showed a decrease in sexual activity and an increase in indifference toward sex, which—according to the authors—may be associated with the loss of intimate relationships as part of separation, divorce, or bereavement.

In the present study, we took advantage of data from two measurement points to determine longitudinal changes in six domains of sexual functioning to assess the long-term covariation in these domains and to compare the results in two groups of pre- and postmenopausal women. Such longitudinal data may be useful in depicting how multiple domains of sexual functioning vary together and affect each other over time, therefore enhancing our understanding of the importance of sexual functioning for sexual and relationship dissatisfaction.

## Aim

The aim of this study was to describe the changes in sexual functioning over time. More specifically, we aimed to answer three questions: 1. To compare the proportion of pre- and postmenopausal women that developed a sexual problem over the 4-year course: Based on previous findings, we hypothesized that in the postmenopausal group, the proportion of women developing a sexual dysfunction from measurement point 1 (T1) to measurement point 2 (T2; 4 years apart) would be higher compared with premenopausal women because of the potentially impairing effects of menopause [5]. 2. To investigate changes in the sexual subdomains and compare them between pre- and postmenopausal women: Based on previous findings, we expected an increase in sexual desire, as well as a decrease of sexual pain symptoms in both groups [5]. However, research has also shown that not all domains of sexual functioning show a decline over time as age does not necessarily represent a global risk factor for sexual

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