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Physical Pain and Psychosocial Predictors of Sexual Activity among Multicultural Older Women

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Authors' contributions

This work was carried out in collaboration among all authors. Author LL designed the study, wrote the first draft of this article and the research protocol, trained research assistants to administer the assessment protocol, and performed the majority of the statistical analyses. Author SG co-wrote several parts of the article, revised the drafted manuscript for publication, and managed literature searches. Author OB managed initial literature searchers, co-wrote the manuscript draft, and performed some of the statistical analyses. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To investigate the relationships between facets of sexual activity among ethnically diverse older women and indicators of their physical pain as well as their psychosocial wellbeing. Physical pain intensity, intimate relationships quality, non-medical psychological distress, and depressive symptomatology were examined as predictors of yearly frequency of interactional sexual activity with an intimate partner and of masturbation.
Study Design: Cross-sectional.
Place and Duration of Study: Department of Psychology, California State University, Northridge, between September 2017 and December 2018.
Methodology: Thirty-four older women between 50 and 84 years (M = 65.85, SD = 7.75) were

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recruited. Participants were reasonably fluent in English, lived independently in the community, self-identified as heterosexual, and reported being in an intimate relationship at the time of data collection. A battery of self-report measures was administered by research assistants over two sessions, on average.

Results: Demographics, yearly frequency of interactional sexual activity and of masturbation, physical pain intensity, dyadic adjustment, non-medical distress, and depressive symptomatology were assessed and analyzed. An intercorrelational matrix was produced and two simultaneous multiple regressions were conducted. They revealed that dyadic adjustment was a significant and positive predictor of the yearly frequency of interactional sexual activity, holding all other predictors constant (b = 1.06, P = .02). Dyadic adjustment was not a significant predictor of yearly masturbation frequency (P = .55). Physical pain and psychological predictors were not related to yearly interactional sexual activity or masturbation frequency (Ps > .05).

Conclusion: Greater dyadic adjustment and associated feelings of satisfaction with an intimate relationship predict significantly higher yearly frequency of interactional sexual activity among older women. Additional research is necessary to corroborate the present findings and identify predictors of masturbation.

Keywords: Older age; sexual health; dyadic adjustment; pain; stress; depressive symptomatology; sexual intercourse; masturbation.

1. INTRODUCTION

Researchers have identified the process of growing older as one of the most common factors affecting sexual activity [1]. The latter has been defined as engaging in any behavior that causes sexual arousal, encapsulating both intercourse with an intimate partner and masturbation [2]. Although evidence suggests that individuals participate in sexual activity and masturbation throughout the lifespan [3], younger adults may wonder about the feasibility of doing so as they reach older adulthood, commonly defined as the chronological age of 50 years or older [4]. In particular, physical pain and psychological challenges prevalent in older age, including pain and distress, may limit engagement in sexual activities. Alternatively, concern may be raised regarding the impact of poor intimate relationship quality on sexual interactions, particularly as women commonly identify emotional intimacy as a key factor impacting engagement in sexual relationships [5]. Potential concerns are notable as negative stereotypes regarding sexual wellness, intimacy, and aging may be internalized and, in turn, affect sexual health [6]. Subjective age appears to predict lower interest in sexual activities and both subjective age as well as negative attitudes towards aging have been linked to the perception of sexual activities as being less enjoyable [7]. Conversely, sexual health and satisfaction with interactional sexual activity have been demonstrated to lower insecurities regarding one's intimate relationship with a partner and significantly improve quality of life [8-10], suggesting that efforts to improve sexual wellness across the lifespan may hold the potential to improve life satisfaction. However, research exploring sexuality in older age is limited, resulting in a scarcity of evidence to contradict present stereotypical beliefs that individuals may hold as well as identify important physical and psychosocial factors impacting sexual health in older age.

1.1 Sexual Activity in Older Age

Approximately 66% of older adults in a community sample reported being sexually active [11]. Additionally, data analyses of a sample of European older adults revealed that between 41% and 65% of older men and between 27% and 40% of older women engaged in masturbation within the past month [11]. Moreover, engagement in sexual activity within the past year was linked to greater enjoyment in life and life satisfaction [13-14]. Thus, research accumulated within the past few decades indicates that many older adults are sexually active and benefit from sexual activity.

Much of the literature on sexual activity relates to the experience of younger adults, men, or older adults in general, with little exploration of the sexual activity of older women. However, evidence suggests that participation in independent and dyadic sexual activities may be uniquely affected by sociodemographic characteristics, including age, gender, and culture. For example, age-related physical constraints emerge throughout the lifespan,

resulting in symptoms of orgasmic and arousal difficulties that negatively impact sexual functioning in older age. [15]. Furthermore, the physical and psychological experience of sex has been shown to differ between men and women throughout the lifespan and in older age. In a sample of adults with symptomatic heart failure, men reported more frequent problems with sexual functioning relative to women. While similarly high rates of distress were endorsed among men and women with sexual activity trouble, men more frequently reported experiencing distress due to this symptom [11]. Moreover, in our research laboratory, Lagana' and Maciel [16] found that engagement in sexual activities among older Mexican American women depended on key themes such as health status and availability of a suitable partner. Together, foundational data have revealed that sexual activity is a diverse experience that is uniquely impacted by one's intersectional identity. Further in-depth research is necessary to clarify factors contributing to the sexual wellbeing of diverse older populations.

Women's sexual health is often overlooked in healthcare settings and in research studies [17-18]. In this empirical article, we endeavor to provide preliminary evidence to clarify predictors of sexual activities in older women as an important step towards promoting improved attitudes towards older adulthood and a healthier aging process. The present research was guided by the well-tested theoretical framework of health that Engel published in 1977 [19] and discussed in 1980 to cover how to clinically apply his 1977 health model [20]. Although dated, this classic biopsychosocial theory of health remains prevalent, as it postulates that health, including sexual health, is significantly related to several physical, psychological, and social/interactional factors. Building on this model, we explored the role of dyadic adjustment, pain intensity, depressive symptomatology, and non-medical stress in predicting yearly frequency of interactional sexual activities and of masturbation in an ethnically-diverse sample of older women.

1.2 Dyadic Adjustment

Dyadic adjustment refers to a complex process within a romantic relationship that includes partners' satisfaction, consensus, cohesion, and expressions of affection [21]. In a sample of community-dwelling older adults, 90% of the participants were married or had intimate partners [11]. Additionally, 68.2% of the women in the sample reported being sexually active, with 91.6% of this sexually active subsample reporting being married [11]. These findings are in line with more recent research evidencing that partnered older adults report higher levels of sexual activity than unpartnered older adults [22]. Furthermore, older adults who were in consensual non-exclusive relationships tended to report similar or higher happiness levels regarding sexual activities than older adults who were in exclusive relationships [23], suggesting that satisfying intimate relationships may predict more frequent and enjoyable sexual interactions. Aligned with this finding, women with a vulvovaginal condition who had positive and collaborative sexual communication patterns with their partners reported better sexual and couple adjustment [24]. Conversely, women with negative collaborative sexual communication patterns reported greater sexual distress and lower relationship satisfaction [24]. Lower relationship satisfaction was similarly endorsed when the women's partners reported negative collaborative sexual communication patterns [24], underlining the synchronous element of dyadic adjustment.

There is a limited amount of research on the association between dyadic adjustment and masturbation. In one sample of 85 Czech younger adult couples ages 20 to 40, lower masturbation frequency predicted positive dyadic adjustment [25]. A more representative analysis of dyads revealed a significant and negative relationship between solitary masturbation activities and relational happiness [26]. Researchers exploring pornography viewing behavior have reported a similar negative association between watching pornography alone and relationship quality among men; however, an inverse relationship was evidenced among women when viewing pornography alone as well as among couples when watching pornography together [27]. While the aforementioned research was focused directly on pornography viewing behaviors, its authors posited that masturbation may mediate the contrasting observed relationships, underscoring the need for further research in this area. In the present study, we have explored this topic further in an attempt to start filling some gaps in the literature regarding the relationship between masturbation and dyadic adjustment in older age.

1.3 Physical Pain

Health and wellbeing are important factors when investigating older adults' sexual activity, given that sexual activity and sex drive in older age

appear to be significantly and positively correlated with good physical and psychological health [22,28]. Additionally, available evidence has indicated an association between sexual inactivity and joint and back problems among older adults [29]. However, there are few published studies on physical pain as it relates to sexual relationships, although a prominent proportion of available research on pain and sexual functioning relates to age-related genital changes. For instance, among postmenopausal women, vaginal discomfort was cited as a key catalyst of intimacy avoidance, loss of sex drive, and reduced intercourse frequency [30]. The predominant reason cited by adult women who experienced pain during sexual intercourse yet still engaged in sexual activity was to care for their partner and seek intimacy for themselves [31]. In a similar sample of women who experienced vaginal discomfort, greater pain efficacy contributed to better sexual intimacy [32]. More recently, researchers found that observed and perceived empathy was associated with a) greater sexual satisfaction among women with vulvodynia (a sexual pain condition) and their spouses, and b) higher levels of relationship satisfaction; additionally, sexual intimacy satisfaction contributed to better sexual functioning [33]. However, women who described their engagement in sexual behaviors as a form of work indicated that it negatively affected their gender identity [31]. Therefore, physical pain as well as personal and medical pain management may be crucial factors contributing to sexual activity and associated relational satisfaction.

There are also only a few published articles on the association between masturbation and physical pain. Early research efforts revealed that only 33% of adults with chronic pain between the age of 29 and 74 engaged in masturbation [34]. More recently, researchers found that women experiencing tension headaches and migraines reported having a lower frequency of masturbation compared to a healthy control group [35]. In a sample of healthy women who engaged in masturbation, the behavior was found to maintain pleasurable sensitivity yet it increased sensitivity to pain *after* masturbation and at orgasm [36], suggesting that masturbatory behaviors have the potential to generate or exacerbate discomfort during sex in older age. Furthermore, when experiencing pain, older women reported concerns about their sexual health [37], a response which may mediate engagement in sexual activity. Given that pain appears to be a prevalent physical and psychosocial stressor among women, additional research pertaining to this association is necessary to elucidate and mitigate the negative aspects of the sexual experiences of older women who have increased susceptibility to somatic and pelvic pain.

1.4 Depressive Symptomatology

Depressive symptomatology plays a critical role in adults' sexual activities with their intimate partners [38], with depressive symptoms being negatively correlated with sexual activity in a community-dwelling sample of older adults [39]. Researchers have reported a stronger relationship between depressive symptomatology and sexual activity level than between the latter and such factors as anxiety, non-medical stress, and physical health [39]. While research efforts targeting the relationship between sexual activity and depression have been scarce concerning subsamples of older women, researchers found that subclinical depression was associated with anxiety prior to sex among older men in their eighties [40]; this finding suggests that depression may also impact sexual intercourse through psychosocial symptomatology. Conversely, improved quality of life and psychological wellbeing contributed to higher levels of sexual activity in older age [41]. Intimate relationships in older age wherein the husband was reported to be more positive in social situations were found to be characterized by higher levels of dyadic sexual activity [42]. This suggests that the psychological state of *each* individual within the dyad is a key factor impacting older adults' sexual activity.

The published literature covering the relationship between depression and masturbation practices is limited; however, early research on the topic revealed that college-aged women with symptoms of depression engaged in masturbation at a higher rate than non-depressed women [43]. Similarly, higher rates of masturbation were evidenced among women in middle adulthood with lifetime depression [44]. More recently, researchers have affirmed the aforementioned association, with a higher frequency of masturbation related to higher levels of depression among adult and middle-aged women [45-0]. However, this evidence was based on non-geriatric samples and is somewhat dated. Furthermore, we found one article published in 2021 in which the authors described a case study of a young man whose masturbatory guilt (which was not assessed in

our present study) contributed to the development of a depressive illness [47]. While there is not enough information in this area on geriatric populations and older women in particular, this may point to a potential dynamic link between masturbation behaviors and depression. In regard to the latter, there is some evidence based on research conducted in our laboratory, in which older women experiencing physical and psychological symptomatology were found to have the potential to be less likely to engage in masturbation, as reported by Lagana' and Maciel [16]. The aforementioned authors qualitatively explored older women's unique construction of their own stories of sexuality and discovered that experiencing physical health problems was significantly related to lower levels of engagement in sexual activities [16]. Masturbation was not mentioned by any of the research participants in the study in question, suggesting that this activity may not have been viewed as a priority, occurred infrequently, or was kept secret due to masturbatory guilt and/or sexual shame (although the sample revealed details of other types of sexual activities). Based on the above considerations, the study of potential predictors of masturbation in older age is an important topic for investigation. However, as there is limited research on this topic thus far, we examined masturbation in older adulthood through an exploratory lens and did not formulate *a priori* hypotheses about this variable.

1.5 Non-medical Stress

Stress has been shown to impact frequency of sexual activity and sexual satisfaction [48-49], although limited data on older adults is available in this area. Research on a sample of older individuals living in the community revealed an association between stress and sexual activity, with higher levels of anxiety and perceived stress being risk factors for worse sexual health [39]. Furthermore, perceived stress appears to be positively associated with feeling obligated to engage in sexual activities among older adults [50]. The aforementioned experience is potentially complicated by the burden of experiencing pain and sexual dysfunction common in older age, as demonstrated by research findings on a sample of adults with symptomatic heart failure who disclosed that significant distress associated with sexual activity arose from problems with sexual interest or activity [12]. Exploring in greater depth as well as normalizing age-related changes regarding sexual activity may provide important information needed to mitigate older adults' perceived stress and reduce its impact on sexual health [51].

A prominent gap currently exists in the literature on masturbation and stress levels among older women as well as aging populations in general. However, in a case study on one 42-year-old male patient diagnosed with post-traumatic stress disorder, it was found that associated symptomatology was related to his sexual dysfunction and heightened masturbation levels [52]. Within a sample of male sex addicts ages 18 to 65 years, distressed male sex addicts reported a higher frequency of masturbation compared to male sex addicts who were not distressed [53]. As studies on stress and masturbation have primarily been conducted on younger individuals, men, or samples gathered in geographical areas other than the United States, more exploratory research is needed to clarify the role of non-medical stress on masturbatory practices of older women.

1.6 Present Study

While published literature has shed some light on the relationships between sexual activity and various physical and psychosocial factors, gaps in the research are evident. Building on prior evidence, in the present study, we aimed to start bridging these gaps in geriatric populations by testing physical pain intensity, multiple aspects of psychopathology, and dyadic adjustment as potential predictors of interactional and independent sexual activities among ethnically diverse older women. Concerning our hypotheses, we predicted that older women experiencing higher pain intensity, elevated depressive symptomatology, and higher levels of non-medical stress would have been less likely to engage in interactional sexual activities. We also hypothesized that dyadic adjustment would be a positive predictor of interactional sexual activities. Concerning the likelihood to masturbate, we conceptualized the investigation of this topic as exploratory, given the scarcity of relevant geriatric evidence. Conducting the present study will help build empirical evidence on this neglected ethnogeriatric topic.

2. METHODOLOGY

2.1 Participants

Thirty-four older women in Southern California were assessed for the present study between September 2017 and December 2018. Age of the

participants ranged from 50 to 84 years (M = 65.85, SD = 7.75). They reported being European-American (32.40%), Mexican-American/Chicana (23.50%), other Hispanic/Latina (23.50%), Black/African-American (8.80%), Asian (8.80%), and Armenian (2.90%). Regarding marital status, 82.40% of participants were married, 8.80% were widowed but dating, and 8.80% were living with a significant other. In addition, religious beliefs differed, with respondents identifying as not religious (58.80%), Catholic (23.50%), Christian (11.80%), agnostic (2.90%), and spiritual (2.90%).

2.2 Procedure

Research participants were recruited as part of a larger study conducted at a comprehensive university in Southern California. Purposive and snowball sampling were used to encourage recruitment of a diverse sample of older women within the community. Recruitment occurred at locations such parks, stores, senior centers, and community centers. Respondents met inclusion criteria if they were: (a) at least 50 years old, (b) reasonably fluent in English, (c) living independently in the community or with their families, (d) currently in an intimate relationship, and (e) self-identifying as heterosexual. Exclusion criteria were: (a) having personal history of institutionalization and (b) being unable or unwilling to provide informed consent for any reason. Students were trained as research assistants and administered a clinical assessment battery inclusive of self-report questionnaires and semi-structured interviews in one-on-one sessions with eligible women. Participants completed the assessment battery within two meetings on average (this was done to reduce participant burden). Responses were recorded in Qualtrics, transferred into the IBM Statistical Package for the Social Sciences (SPSS; Version 25.0), and de-identified prior to conducting the analyses.

2.3 Measures

2.3.1 Demographics

Sociodemographic information was collected as part of the self-report assessment battery administered to participants, guided by a 12-item tool developed by the first author and used in several NIH-funded studies conducted in our research laboratory. Demographics assessed for the current study included age, ethnicity, income, religious affiliation, and marital status.

2.3.2 Dyadic/couple adjustment

Dyadic adjustment was quantified using the 15-item Marital Adjustment Test (MAT) [54], which measures satisfaction among individuals involved in marital relationships or intimate/couple relationships. Items were scored on a variety of response scales. Sample items included: "Check the dot on the scale line below which best describes the degree of happiness, everything considered, of your present marriage" (given that a few older women were not married, to maximize our sample size, we allowed the participants living with a significant other to include their responses) and "Do you and your mate engage in outside interests together?" Responses were summed in order to yield a total score ranging from 2 to 158, with higher scores indicating greater satisfaction with the intimate relationship. A cutoff score of 100 has been established for this instrument, with scores below this value indicating a maladjusted intimate relationship. This classic measure has demonstrated very good internal consistency (Cronbach's α = .88) [55].

2.3.3 Physical pain intensity

This variable was assessed using the Medical Outcomes Study Short-Form (MOS SF-36) health survey [56]. Specifically, the "bodily pain" subscale was utilized to measure physical pain experienced within the past four weeks. This subscale consists of two questions: "How much bodily pain have you generally had during the past four weeks?" with response options ranging from 1 (*None*) to 6 (*Very severe*), and "How much did pain interfere with your normal work (including both work outside of your home and housework)?" with response options ranging from 1 (*Not at all*) to 6 (*Extremely*).

2.3.4 Perceived stress

The Older Women's Non-Medical Stress Scale (OWN-MSS) [57] is a 9-item measure created by the first author as one of the main goals of a prior NIH grant on which she was the Principal Investigator in order to assess older women's perceived emotional stress associated with potentially stressful issues such as providing care to family and friends, experiencing financial difficulties in general, or losing a spouse. Items were scored on a six-point Likert scale, ranging from 0 *(Not at all*) to 5 (*Extremely*). Participants were additionally able to indicate if the stressor was not applicable (*N/A*). Published research has

evidenced acceptable internal consistency and validity of this tool (Cronbach's α = .66) [57].

2.3.5 Depressive symptomatology

The Center for Epidemiological Studies - Depression Scale (CES-D) is a 20-item clinical tool developed in 1977 to measure symptoms of depression [58]. Items were scored on a four-point Likert scale, ranging from 0 [*Rarely or none of the time (less than 1 day)*] to 3 [*Most or all of the time (5-7 days)*]. Sample items included "I was bothered by things that usually don't bother me" and "I had crying spells." Items were summed to yield a total score, with higher scores being indicative of more severe depression. Cutoff values have been developed, such that total scores ranging from 0 to 15 indicate no significant clinical depression, those ranging from 16 to 59 indicate subclinical depression, and a total score of at least 60 indicates a potential diagnosis of Major Depressive Disorder. Researchers have reported that the CES-D has good psychometric properties, with Cronbach's alpha ranging from .80 to .94 [59-61].

2.3.6 Yearly frequency of interactional sexual activity and masturbation

The Intimacy Interview Protocol is a four-part clinical protocol assessing multiple facets of sexual experiences (R Carroll, personal communication, Northwestern Medical Faculty Foundation, 1995). The first author has used this assessment tool in other published studies. Select items of this clinical interview protocol were used to query yearly frequency of sexual activities. Specifically, yearly frequency of interactional sexual activity was quantified by eliciting participants' free response to "How often do you have sex with a partner?" Building on this measure, the following novel items were developed for the purposes of the present study to assess yearly frequency of masturbation, namely: "Do you masturbate?" and "How many times a year do you masturbate?"

3. RESULTS AND DISCUSSION

Means and standard deviations of measured variables are reported in Table 1. Data analyses were conducted in IBM SPSS (Version 25.0). Categorical demographic variables of ethnicity, marital status, and religious affiliation were dummy-coded to assess their correlations with the independent and dependent variables. To optimize the methodological rigor of the study, prior to conducting the data analyses, we examined the data for outliers. Two univariate outliers were identified and retained due to the small sample size and as their values fell within possible limits. Multivariate outliers were subsequently assessed, and no outliers were revealed.

3.1 Intercorrelational Matrix

Pearson correlations were conducted in order to quantify the strength of the bivariate relationships among demographics variables, predictor variables (dyadic adjustment, depressive symptomatology, non-medical stress, physical pain), and outcome variables (i.e., yearly frequency of interactional sex and of masturbation). Correlations are reported in Table 2. Variables with nonsignificant associations (e.g., yearly masturbation frequency) were not included due to space limitations.

The more advanced the age of the women in the sample, the more likely they were to be widowed (r = .43, P = .01). Relative to the non-Christian respondents, Christian women were less likely to be married (r = -.55, P < .001) and more likely to live with their significant other (r = .53, P = .001). In addition, Mexican-American women were more likely to be low-income (r = -.36, P = .04) and European-American women were more likely to be of high-income status (r = .62, P < .001). Non-Mexican Hispanic-American women were less likely to be non-religious (r = -.38, P = .03) as well as more likely to identify as Catholic (r = .35, P = .045), whereas European-American women were less likely to identify as Catholic (r = -.38, P = .03).

Mexican-American women were less likely than their non-Mexican-American counterparts to have interactional sex (r = -.34, P = .049). Older women living with a significant other were more likely to engage in interactional sexual activity than older women not living with a significant other (r = .47, P = .01). Higher income was associated with higher marital adjustment (r = .36, P = .04), lower depressive symptomatology (r = -.42, P = .01), and higher frequency of yearly interactional sexual activities (r = .39, P = .02). Higher levels of marital adjustment were significantly correlated with higher rates of yearly sexual activity (r = .41, P = .02). Physical pain intensity, non-medical stress, and yearly frequency of masturbation were not significantly correlated with the variables included in this analysis.

Table 1. Descriptive statistics for the independent and dependent variables

Variables	Range	M	SD
Yearly sexual frequency	0-288	57.03	80.55
Yearly masturbation frequency	0-48	5.00	10.31
Dyadic adjustment	17-132	94.65	31.31
Physical pain intensity	4-11	5.56	1.54
Non-medical stress	1-31	11.91	7.87
Depressive symptomatology	3-31	16.65	6.81

Table 2. Intercorrelational matrix of significant relations among variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	--													
2. Mexican-American	-.14	--												
3. Other Hispanic/Latino	-.02	-.31	--											
4. European American	.12	-.38*	-.38*	--										
5. Married	-.14	.26	.08	-.01	--									
6. Widowed with partner	.43*	-.17	.07	.01	-.67**	--								
7. Living with significant other	-.24	-.17	-.17	.01	-.67**	-.10	--							
8. Income	.10	-.36*	-.28	.60**	.16	-.02	-.10	--						
9. Not religious	.00	.18	-.38*	.32	.24	-.16	-.16	.30	--					
10. Christian	.12	-.20	.01	.14	-.55**	.21	.53**	-.34	-.44**	--				
11. Catholic	.09	.02	.35*	-.38*	.08	.07	-.17	-.20	-.66**	-.20	--			
12. Dyadic adjustment	-.05	-.27	-.13	.34	.11	-.26	.12	.36*	-.09	.13	-.09	--		
13. Depression	-.12	.10	-.00	-.06	-.20	-.03	.29	-.42*	-.01	.20	-.04	-.02	--	
14. Yearly sexual activity	-.32	.34*	-.10	.29	-.19	-.22	.47**	.39*	-.04	.19	-.33	.41*	-.13	--

*Note. *P < .05, **P < .01; Ethnicity Coding (Black = 1, Not Black = 0; Mexican-American = 1, Not Mexican-American = 0; Other Hispanic/Latino = 1, Not Other Hispanic/Latino = 0; European American = 1, Not European American = 0); Marital Status Coding (1 – Married, 0 = Not Married; 1 = Widowed with Partner, 0 = Not Widowed with Partner; 1 = Living with Significant Other, 0 = Not Living with Significant Other); Religious Affiliation Coding (1= Not Religious, 0 = Religious; 1 = Christian, 0 = Not Christian; 1 = Catholic, 0 = Not Catholic)*

3.2 Simultaneous Multiple Regression

Two multiple linear regression analyses were conducted in order to examine the unique contribution of dyadic adjustment, pain intensity, depressive symptomatology, and non-medical stress to yearly frequency of interactional sexual activity (Table 3) as well as to yearly frequency of masturbation (Table 4).

As detailed in Table 3, dyadic adjustment was a significant predictor of yearly interactional sexual activities (*b* = 1.06, *P* = .02). A one-point increase in dyadic adjustment was associated with a 1.06 point increase in yearly frequency of interactional sexual activity, holding all other predictors constant. However, physical pain intensity (*b* = 2.70, *P* = .76), non-medical stress (*b* = -1.60, *P* = .38), and depressive symptomatology (*b* = -0.81, *P* = .70) did not significantly predict yearly frequency of interactional sexual activity.

Multiple regression analyses revealed that dyadic adjustment (*b* = 0.04, *P* = .55), physical pain intensity (*b* = -0.91, *P* = .46), non-medical stress (*b* = 0.04, *P* = .89), and depressive symptomatology (*b* = 0.29, *P* = .75) were non-significant predictors of yearly masturbation frequency among our research participants.

3.3 Discussion

The purpose of this study was to examine whether dyadic adjustment, physical pain intensity, non-medical stress, and depressive symptomatology were significant predictors of yearly frequency of sexual activities among ethnically diverse older women. The intercorrelational matrix findings revealed a variety of significant relationships among the demographic variables, physical and psychological predictors, as well as sexual wellbeing. While discussion of these intercorrelations is beyond the scope of this article, the observed relationships indicate that consideration of the unique influence of intersectional identities on sexual wellbeing and activity may be needed to further advance research on older adults in the community. Interested researchers could conduct qualitative or mixed-method studies to uncover more sociostructural, cultural, and psychological determinants of sexual health within relevant populations. Results of future research may further enhance practitioners' ability to guide culturally conscious collaborations with clients presenting with sexuality concerns.

Table 3. Multiple regression results predicting yearly interactional sexual activities from dyadic adjustment, physical pain intensity, non-medical stress, and depressive symptomatology

Predictor Variables	***b***	***SE***	***ß***
Dyadic adjustment	1.06	0.43	.41*
Physical pain intensity	2.70	8.72	.05
Non-medical stress	-1.60	1.81	-.16
Depressive symptomatology	-0.81	2.07	-.07
Multiple *R*		.46	
R^2		.21	
Adjusted R^2		.10	
F-value		1.89	

*Note. b = unstandardized betas; ß = standardized betas; *P < .05. **P < .01.*

Table 4. Multiple regression results predicting yearly masturbation from dyadic adjustment, physical pain intensity, non-medical stress, and depressive symptomatology

Predictor Variables	***B***	***SE***	***ß***
Dyadic adjustment	0.04	0.06	.11
Physical pain intensity	-0.91	1.23	-.14
Non-medical stress	0.04	0.26	.03
Depressive symptomatology	0.09	0.29	.06
Multiple *R*		.20	
R^2		.04	
Adjusted R^2		-.09	
F-value		0.29	

*Notes: b = unstandardized betas; ß = standardized betas; *P < .05. **P < .01.*

Using multiple regression analyses, we discovered that dyadic adjustment was the sole significant predictor of yearly frequency of interactional sexual activity, controlling for physical pain intensity, non-medical stress, and depressive symptomatology. This suggests that satisfaction and attunement with one's intimate partner are key to engaging in interactional sexual activity, accounting for the influence of the physical pain and psychological symptomatology experienced by ethnically diverse older women. This result innovatively adds to the findings of the published literature. The fact that dyadic adjustment significantly and positively related to interactional sexual activity complements the results of prior published research suggesting that older women who have an intimate partner do engage in sexual activity [11], while also suggesting that relationship satisfaction may account for a portion of this relationship. While additional studies inclusive of a larger, more representative sample and a longitudinal design may further clarify and corroborate this point, our pilot results may represent a potentially critical finding for geriatric research. Verification of these results on clinical samples could enable the translation of relevant research to clinical practice in the future. For example, mental health professionals working with older women seeking to improve the quality as well as the frequency of their sexual activities may collaboratively choose to focus initial efforts not on the women's sexual challenges but on improving the quality of these older clients' intimate relationships over individual characteristics of physical pain, stress, or depressive symptomatology. Furthermore, as sexual activity in older age has been demonstrated to promote healthier intimate relationships [62] as well as benefit daily life activities and quality of life [63], it is possible that encouraging greater dyadic adjustment among older women may promote a more fulfilling life; additional research in this geriatric area is certainly needed.

Conversely, dyadic adjustment was observed to be a nonsignificant predictor of yearly masturbation frequency. Furthermore, physical pain intensity, non-medical stress, and depression symptoms were found to be nonsignificant predictors of both yearly interactional sex frequency and yearly masturbation frequency. These findings may be reflective of a divergent relationship between explored biopsychosocial factors and interactional or independent sexual practices. It is possible that older women may perceive that there are benefits stemming from performing sexual activities (such as pleasant feelings related to their increased bonding with their partner) and thus engage in sexual behaviors in spite of experiencing physical pain or psychopathology. However, our findings contradict published research evidencing a strong correlation between older adults' level of sexual activity and physical as well as psychological health [22]; additional studies are needed to clarify these conflicting results. Additionally, more research should be conducted on masturbation among our target population, as our exploration of this variable did not reveal any significant associations between included predictors and masturbation.

Although the present findings contribute to filling gaps in the existing research on sexual activity in older women, certain limitations of our study may have impacted the observed outcomes. Due to the pilot nature of this study, a modest sample of older women was recruited. As a result, relatively low statistical power and limited variability on measured variables may have adversely impacted the likelihood of observing true effects. While we endeavored to recruit a representative and ethnically diverse sample of older adults, homogenous sampling was employed with regard to such sociodemographic factors as gender, sexual orientation, intimate partner status, and geographic location in order to benefit statistical power. Additionally, participants in our sample endorsed a limited range of religious affiliations; generalizability of results may be limited as a result. Similarly, use of self-report measures may have resulted in response bias. For example, participants may have perceived researcher bias among some of our data collection assistants (a challenge common in studies of this kind) or held internalized aging sexual stigma [6], lending to reticence to openly disclose sexual activity or factors impacting sexual health. Alternate measures may additionally be considered for use in future research covering the topic of sexual activities. For example, the MAT has been historically criticized for assessing anachronistic expectations for relationships [64]. Although this measure was implemented in the present study to align with the views held by the target population of older adults, interested researchers may consider utilizing a more modern tool with stronger psychometric properties [65]. While beyond the scope of this preliminary study, obtaining collateral reports from family members or from treating medical professionals could have

benefitted data quality. Finally, a cross-sectional design was employed to minimize participant burden; however, as a result, we cannot infer causation. Therefore, it is possible that feeling close and content within an intimate sexual partnership may lead to more frequent sexual activities; on the other end, it is also possible that a higher frequency of sex in older age could be inspiring greater relational satisfaction. Engagement in mixed-method research inclusive of larger samples would be ideal, given that implementing it would allow interested researchers to examine in greater depth the role of multiple physical and psychological variables in the sexual activities of ethnically diverse older women. Moreover, research on international samples of older women is highly needed in this area, as evidenced by the fact that, to our knowledge, only the modestly-sized studies conducted in our Los-Angeles-based laboratory have covered factors affecting the sexual health of multicultural older women. Additionally, research on the topics in question is particularly lacking on older women with gender and/or sexual minority identities.

4. CONCLUSIONS

The purpose of this investigation was to determine whether dyadic adjustment, physical pain intensity, non-medical stress, and depressive symptomatology were significant predictors of sexual facets of ethnically diverse older women's lives. Although methodological limitations exist, this pilot investigation has contributed to efforts to fill prominent gaps in the geriatric literature on sexual practices among older women. Correlation analyses revealed significant relationships between demographic factors, psychosocial variables, and sexual practices. Additionally, multiple regression analyses showed that dyadic adjustment is a significant predictor of yearly frequency of sexual interaction. Our findings may motivate interested researchers to conduct more in-depth studies utilizing larger and more inclusive samples in order to ascertain factors contributing to sexual wellbeing in aging populations. Further research in this domain may serve as a foundational first step to bridging the research-to-practice gap and guiding health practitioners in the development and implementation of innovative interventions to support the sexual health of older adults.

DISCLAIMER

The products used to implement this research are commonly used in our area of research and in our country. There is absolutely no conflict of interest between the authors and the producers of these products, as we do not intend to use them as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company. Rather, it was funded by a grant from the national institutes of health and by personal efforts of the authors.

CONSENT

As per international standard or university standard, participants' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

The authors hereby declare that all the procedures of this study have been examined and approved by the CSUN Institutional Review Board committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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