ORIGINAL RESEARCH

Sexual activity and physical tenderness in older adults: prevalence and associated characteristics from a Belgian study

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Abstract

Background

Despite the World Health Organization (WHO) calling for sexuality to be recognized as an aspect of well-being, no studies have explored sexual activity and physical tenderness in older adults aged ≥ 75 years in Belgium or those aged ≥ 85 years worldwide.

Aim

To assess the prevalence and predictors of sexual activity and physical tenderness in a sample of older adults.

Methods

Using data from a Belgian cross-sectional study on sexual violence (UN-MENAMAIS), information on sexual activity, physical tenderness, and associated characteristics was collected during structured face-to-face interviews with older adults living in the community, assisted living facilities, or nursing homes.

Cluster random probability sampling with a random route-finding approach was used to select the participants.

Outcomes

Current sexual activity and physical tenderness in the previous 12 months, sociodemographic characteristics, chronological age, subjective age, number of sexual partners, sexual satisfaction, attitudes toward sexuality in later life, quality of life, and lifetime sexual victimisation.

Results

Among the 511 participants included, 50.3% were in a relationship, mainly living with their partner; 31.3% indicated they were sexually active; and 47.3% of sexually inactive participants reported having experienced forms of physical tenderness in the previous 12 months. Sexual activity was associated with the presence of a partner, satisfaction with sexual life, permissive attitudes regarding sexuality in later life, a younger age, and a lack of disability. Physical tenderness was associated with the presence of a partner, community residency, and permissive attitudes regarding sexuality in later life.

Clinical implications

Raising awareness among the general population, healthcare professionals, and older adults about sexuality in later life could contribute to ending this taboo and should therefore be a priority for society.

Strengths and limitations

Our study fills a gap in the literature regarding sexual activity and physical tenderness in older adults aged ≥ 70 years, including respondents aged up to 99 years. Additionally, we explored different forms of sexual expression beyond intercourse, and face-to-face interviews contributed to the quality of the collected data. The main limitation of this study was the sample size, although the findings were similar to recent statistical indicators in Belgium.

Conclusion

One in three older adults aged ≥ 70 years living in Belgium are sexually active. These findings provide an opportunity to inform the general public and older adults about later life sexuality and to educate healthcare professionals about aging sexuality to increase discussions and avoid assumptions of asexuality in later life.

Keywords: geriatrics, sexuality, aging, 70 years and older, sex factors, tenderness

Introduction

According to the United Nations (UN)[1], in 2019, there were over 700 million people aged ≥ 65 globally. This age group is estimated to exceed 1.5 billion people in the next 30 years[1]. The Belgian population of older adults aged > 65 years increased from 1,474,059 in 1990 to 2,204,478 in 2020[2]. Moreover, Europeans' life expectancy at age 65 in 2019 was estimated at 20.2 years[3]. As the population of older adults increases and people live longer, society is confronted with particular aspects of a longer life expectancy, such as sexuality in later life.

The World Health Organization (WHO) states that sexual health "requires a positive and respectful approach to sexuality and sexual relationships", and in order to attain and maintain sexual health, "the sexual rights of all persons must be respected, protected, and fulfilled"[4]. In 2013, the WHO recognised sexuality as part of well-being[5] and proposed the promotion of sexual health and rights in older adults[6]. Older adults have expressed a desire for healthcare providers to pay more attention to sexuality in later life[7] and provide help if needed[8]. However, studies have shown that healthcare professionals lack knowledge and communication skills on aging sexuality[9], that older patients' sexuality is considered outside the scope of practice[10], and medicine-based treatment plan regarding sexual dysfunction is recommended to older patients, compared to the therapy treatment plan recommended to younger patients[11].

Older adults in good health and with opportunities for sexual expression continue to engage in sexual activity past the age of 70, and do not show a substantial decrease in activity compared with other age groups[12, 13]. Older adults with a partner (whether they live together, have a spouse, or are in a relationship) are more likely to be sexually active[14-20] compared with those who are not married or not in a relationship. Among other factors, living in a nursing home seems to be a barrier to sexual expression[21, 22]. Positive and permissive attitudes toward sexuality in later life contribute to the continuum of sexual activity in older adults[15, 23]. Furthermore, the importance of sexual satisfaction as a contributing factor to older couples' successful aging, based on social connectedness, absence of depression, and life satisfaction, has been confirmed by significant and consistent associations between successful aging and sexual satisfaction[24].

Several authors have reported an association between sexual activity and well-being (one component of health based on the WHO's definition)[25] and quality of life. Particularly, a link between sexual activity and psychological well-being has been reported, with more favourable scores on subjective well-being in those with higher sexual desire, more frequent partnered sexual activities, and fewer issues with sexual functioning[26]. Well-being is associated with sexual satisfaction, sexual self-esteem and sexual pleasure[27],

and positive sexual activity[28], which is defined based on the frequency of intercourse in men and enjoyment of intercourse in women[28]. For older adults, sexual activity or other forms of affection have been associated with lower levels of depression[29] and a greater enjoyment of life[28]. Previous research suggests that sexual activity in older adults is often underestimated if only the frequency of sexual intercourse is taken into consideration, as other types of sexual expression are relevant to older adults. Therefore, our study involved questions regarding both sexual activity and physical tenderness[9].

Previous relevant studies in Belgium have mainly assessed older adults aged ≤ 75, and the oldest participants worldwide have only been aged up to 80 or 85 years[9]. To the best of our knowledge, no previous studies have explored sexual activity and physical tenderness among adults aged > 75 years in Belgium[23] or worldwide among adults aged > 85[30]. Therefore, in this study, we assessed sexual activity and physical tenderness in later life, analysing sex, chronological age, subjective age, living situation, relationship status, number of sexual partners, sexual satisfaction, physical health, attitudes toward sexuality in later life, and quality of life using data from a Belgian sample. Our first hypothesis was that many older adults in a relationship continue to be sexually active or to express physical tenderness. We also hypothesised that health status (chronic illness or disability) has an impact on older adults' sexuality. Finally, we hypothesised that there is an association between chronological age, subjective age, sexual activity, and physical tenderness. We also assessed differences between women and men regarding these predictors.

In this study, we used the terms "sexual activity" and "physical tenderness". We considered participants to be "sexually active" if they reported any sexual practices, such as masturbation, sexual intercourse, oral sex, or anal sex, and it was not restricted to sexual contact with penetration[17, 19]. Physical tenderness was used to refer to other types of intimate contact not involving penetration or masturbation. Examples of physical tenderness included cuddling and kissing[17]. Specific questions regarding sexual activity, physical tenderness, and sexual victimisation can be found in the appendix.

Methods

UN-MENAMAIS study

This study used data from a nationwide Belgian cross-sectional survey that focuses on a better UNderstanding of the MEchanisms, NAture, MAgnitude, and Impact of Sexual Violence (UN-MENAMAIS). We aimed to explore sexual victimisation and perpetration among the general population and vulnerable groups (older adults, LGBT, migrants, etc.) aged 16–100 years. The present methods and results describe a survey conducted among the older adult population of Belgium.

We used two-stage cluster random sampling to obtain a representative sample of adults aged ≥ 70 years. Based on previous studies[31, 32], we estimated a minimum sample size of 845 participants. More information on the development of the questionnaire, sample size calculation, and methods can be found elsewhere[33].

Data collection began in July 2019. Following a random route-finding approach, interviewers enquired at every household on their itinerary for an eligible participant. Inclusion criteria were as follows: aged ≥ 70 years; Belgium resident; spoken language of Dutch, French, or English; and sufficient cognitive abilities. Cognitive status was not formally determined in this study, but was assessed based on the participant's ability to maintain attention during the interview, the consistency of their answers, and through a control question that compared the participant's birth year and age[34, 35]. These two questions were asked at different time points during the interview. Interviewers had extensive experience interviewing older adults, were thoroughly trained and guided throughout the data collection period. Participants who were unable to provide consistent answers or to maintain attention during the interview were excluded from the data analysis. Due to the COVID-19-related lockdown and social distancing measures enforced by the Belgian Government, data collection ended abruptly in March 2020.

Our study followed the standards for safety measures in sexual violence research[36]. In order to ensure the safety of participants and interviewers, several recommendations were followed. The study was presented as the "Belgian Survey on Health, Sexuality, and Well-being" and only one respondent per household was permitted. More information on these recommendations can be found elsewhere[33]. Since the study addressed the topic of sexual violence and some of the older adults could have been sexually victimised by family members or people in frequent contact with them, proxy respondents were not permitted[33].

Interviewers were required to follow a Kish grid[37] to select participants when encountering nursing homes or assisted living facilities. This approach is similar to the sampling technique that was used by Naughton et al.[34] in their study on elder abuse and neglect in Ireland.

In total, we collected data from 528 questionnaires. We excluded 15 participants for incomplete answers (failing to complete the SV victimisation module) or the presence of multiple outliers. Two more participants were excluded from our analysis since they did not complete the sexual activity and physical tenderness items, and 45 were excluded based on insufficient cognitive abilities. A total of 511 participants were thus included in the analysis. The study received ethical approval from the Ethics

Committee of Ghent University/Ghent University Hospital (Belgian registration number: B670201837542) and the University of Liège (1819-24). All participants provided written informed consent.

Sexual activity and physical tenderness

Sexuality was evaluated via two behaviourally specific questions, the first of which was "Are you sexually active? This is not restricted to sexual contact with penetration (also included are, for example, masturbation, sexual intercourse, oral sex, anal sex, …)". Only in the case of a negative answer was the second item asked: "Have you experienced other forms of physical tenderness in the last 12 months (e.g. cuddling, hugging)?" (see the appendix).

Associated characteristics

Sexual satisfaction and attitudes towards sexuality

Sexual satisfaction was investigated through assessing overall satisfaction with sexual life in the previous year (see the appendix), measured on a 5-point Likert scale and regrouped into categorical variables with three modalities (positive, neutral, and negative). Attitudes toward sexuality in later life were evaluated using the first six attitude-related questions of the Aging Sexual Knowledge and Attitudes Scale (ASKAS), rescaled from a 7-point to a 5-point Likert scale[38] (see the appendix). Alterations to the original scale were deemed necessary to minimise respondent fatigue. Following the rationale presented by White[38], we computed total scores such that higher scores would reflect less permissive attitudes and lower total scores would indicate more permissive attitudes toward sexuality in later life.

Quality of life

We evaluated quality of life using the question "How would you rate your quality of life?", measured on a 5-point Likert scale and collapsed into categorical variables with three modalities (positive, neutral, and negative).

Sociodemographic characteristics

We evaluated the participants' living situation by combining two items regarding residency in nursing homes and assisted living facilities. The participants' relationship status was identified with the item "What describes your current relationship status best?". Respondents could indicate whether they lived with a partner, were in a relationship but not living together, or did not have a relationship/partner. We collapsed this item into a dichotomous variable reflecting the presence or absence of a partner.

Chronic illnesses/disabilities

Chronic illness and disability were evaluated based on the following dichotomous questions, “Do you suffer from a chronic illness that limits you in your everyday activities? (Everyday activities such as working, shopping, going to school, managing your life, keeping in contact with other people, …)”, “Do you suffer from a disability that limits you in your everyday activities? (Everyday activities such as working, shopping, going to school, managing your life, keeping in contact with other people, …)”, and “From which chronic illness or disability do you suffer?” (see the appendix). We used the ICD-11 to recode each answer into one of the main categories of this classification. Medications were not assessed to reduce questionnaire length. However, participants were asked how they would rate the quality of their life, from ‘very poor’ to ‘very good’. These answers were used to indicate the participants’ perception of the impact of their health issues, among other factors, on their lives.

Subjective age

We measured subjective age using an item inspired by a study conducted by Stephan et al.: “Many people feel older or younger than they actually are. How old do you feel?”[39]. Differences between chronological and subjective age were computed such that a positive difference would reflect a younger perceived age. Subjective age was assessed prior to the chronological age.

Sexual violence

Finally, sexual violence (SV) was assessed as a dichotomous variable through the presence of at least one of the 17 hands-off or hands-on sexual victimisation items from the UN-MENAMAIS survey (see the appendix) indicating the occurrence of SV over their lifetime. More information on the module of sexual victimisation can be found elsewhere[40].

Statistical analysis

First, we assessed sociodemographic characteristics and the prevalence of sexual activity and physical tenderness based on sexuality-related variables. Prevalence was described separately for men and women to determine whether birth sex had any effect on the variables. We compared variables between the sexes in the total sample using Pearson’s chi-square and bootstrapped independent t-tests (1000 iterations). Bonferroni correction was applied to account for multiple comparisons. We then performed two multiple logistic regression analyses to investigate sexuality-related variables as predictors of sexual activity and physical tenderness. Lifetime SV was included in the models to evaluate any confounding effects. All variables were added simultaneously. The multicollinearity and linearity of the logit assumptions were tested a priori using the variance inflation factor (VIF) and Box-Tidwell test,

respectively. The results indicated no violation of these assumptions. All analyses were performed using SPSS Statistics version 27.0 (IBM Corp., Armonk, NY, USA). Statistical significance was set at $P < .05$ and missing data were handled using pairwise deletion. On average, there was less than 2% missing data for the partner status, disability, and subjective age variables.

Results

Sociodemographic characteristics and prevalence of sexual activity and physical tenderness

In this study, estimates of sociodemographic characteristics showed similarities with recent statistical indicators in the Belgian population. The representativeness of the sample is discussed elsewhere[33]. The sociodemographic characteristics of the participants are shown in Table 1. Unfortunately, the minimum sample size could not be reached since data collection had to be prematurely terminated. However, the sample appeared to be a valid representation of the Belgian population[33]. Several indicators (age, gender, and relationship status) showed significant similarities with data from the National Register[41].

Table 1. Sociodemographic characteristics stratified by age (n = 511)

	N (%)			
Age group		**70-79 (n = 282)**	**80-89 (n=200)**	**90-99 (n = 29)**
Sex at birth				
Female	297 (58.1)	164 (32.1)	118 (23.1)	15 (3)
Male	214 (41.9)	118 (23.1)	82 (16.1)	14 (2.8)
Language				
Dutch	268 (52.4)	148 (29)	105 (20.6)	15 (3)
English	1 (0.2)	1 (0.2)	0 (0)	0 (0)
French	242 (47.4)	133 (26.1)	95 (18.6)	14 (2.8)
Country of origin				
Belgium	462 (90.4)	252 (49.4)	183 (35.9)	27 (5.3)
Other*	49 (9.6)	30 (5.9)	17 (3.4)	2 (0.4)
Educational level				
Primary or none	126 (24.7)	53 (10.4)	58 (11.4)	15 (3)
Secondary	226 (44.2)	128 (25.1)	89 (17.5)	9 (1.8)
Higher	159 (31.1)	101 (19.8)	53 (10.4)	5 (1)
Economic status				
Low	134 (26.3)	204 (40.1)	150 (29.5)	21 (4.2)
High	375 (73.7)	76 (15)	50 (9.9)	8 (1.6)
Sexual orientation				
Heterosexual	473 (92.6)	267 (52.3)	181 (35.5)	25 (4.9)
Bisexual	3 (0.6)	1 (0.2)	1 (0.2)	1 (0.2)
Gay/Lesbian	2 (0.4)	2 (0.4)	0 (0)	0 (0)
Pan-, omnisexual	3 (0.6)	3 (0.6)	0 (0)	0 (0)
Asexual	12 (2.3)	6 (1.2)	6 (1.2)	0 (0)

Other	18 (3.5)	3 (0.6)	12 (2.4)	3 (0.6)

* Included 197 countries, the Belgian residency constituted an inclusion criterion.

Among the older adults, 31.3% were sexually active, and 68.7% were sexually inactive. Almost half of the sexually inactive older adults (47.3%) reported having experienced forms of physical tenderness in the previous 12 months (see Figure 5 in the appendix). On average, participants indicated having around three sexual partners during their lifetime (3.4 ± 6.9). Only 2.2% of older adults indicated an absence of lifetime sexual activity. Overall, 74.4% of sexually active and 59.5% of sexually inactive older adults reported satisfaction with their sexual life. Similarly, 85% of sexually active and 77.5% of sexually inactive individuals indicated a (very) good quality of life. Overall, 53% of older adults who reported an absence of physical tenderness indicated positive sexual satisfaction, and 75.4% indicated a (very) good quality of life. On average, participants felt younger than their chronological age (10.75 ± 12). The prevalence of sexual activity and physical tenderness in this study is further described in Tables 2 and 3. See in the appendix Figures 2, 3 and 4 that present associated characteristics by sexual activity status.

Table 2. Prevalence of sexual activity for men and women based on associated characteristics (n = 511)

	Men		**Women**				
	Yes (n = 96)	**No (n = 118)**	**Yes (n = 64)**	**No (n = 233)**	X^2	*t*	*P* value
	N (%)/mean ± SD	N (%)/mean ± SD	N (%)/mean ± SD	N (%)/mean ± SD			
Chronological Age	75.72 ± 5.09	81.12 ± 6.49	76.08 ± 4.87	80.03 ± 6.47		-.87	.38
Subjective age difference	11.22 ± 10.64	9.5 ± 11.52	10.76 ± 10.77	11.21 ± 13.09		.26	.78
Partner					33.67		<.001†
Yes	79 (37.1%)	60 (28.2%)	48 (16.2%)	68 (23%)			
No	17 (8%)	57 (26.8%)	16 (5.4%)	164 (55.4%)			
Living situation					0.34		.55
Community-dwelling	92 (43%)	105 (49.1%)	61 (20.5%)	208 (70%)			
Nursing home/Assisted living facility	4 (1.9%)	13 (6.1%)	3 (1%)	25 (8.4%)			
Chronic illness					1.21		.27
Yes	21 (9.8%)	35 (16.4%)	8 (2.7%)	83 (27.9%)			
No	75 (35%)	83 (38.8%)	56 (18.9%)	150 (50.5%)			
Disability					0.13		.71
Yes	25 (11.7%)	55 (25.7%)	11 (3.7%)	95 (32.1%)			
No	71 (33.2%)	63 (29.4%)	53 (17.9%)	137 (46.3%)			
Satisfaction with sexual life					11.47		.003†
Neither satisfied nor dissatisfied	17 (7.9%)	27 (12.6%)	5 (1.7%)	72 (24.2%)			
Very dissatisfied/ Dissatisfied	12 (5.6%)	26 (12.1%)	7 (2.4%)	17 (5.7%)			
Very satisfied/Satisfied	67 (31.3%)	65 (30.4%)	52 (17.5%)	144 (48.5%)			
Attitude sexuality *	12.33 ± 3.7	13.12 ± 4	11.73 ± 3.45	14.43 ± 4.18		-3.01	.003†

Quality of life					5.13	0.77
Neither poor nor good	12 (5.6%)	12 (5.6%)	6 (2.0%)	49 (16.5%)		
Very Poor/Poor	5 (2.3%)	5 (2.3%)	1 (0.3%)	13 (4.4%)		
Very Good/Good	79 (36.9%)	101 (47.2%)	57 (19.2%)	171 (57.6%)		
Lifetime sexual violence					34.73	<.001†
Yes	23 (10.7%)	39 (18.2%)	44 (14.8%)	120 (40.4%)		
No	73 (34.1%)	79 (36.9%)	20 (6.7%)	113 (38.0%)		

* Attitudes towards sexuality in later life were evaluated with the first six questions from the Aging Sexual Knowledge and Attitudes Scale (ASKAS), rescaled from a 7-point to a 5-point Likert scale
† Statistically significant differences between sex at birth after Bonferroni correction

Table 3. Prevalence of physical tenderness in the previous 12-months for men and women based on associated characteristics (n = 347)

	Men		**Women**	
	Yes (n = 62)	**No (n = 55)**	**Yes (n = 102)**	**No (n = 128)**
	N (%)/mean ± SD	N (%)/mean ± SD	N (%)/mean ± SD	N (%)/mean ± SD
Chronological Age	80.13 ± 6	82.09 ± 6.88	79.67 ± 5.85	80.46 ± 6.92
Subjective age difference	8.13 ± 10.34	11.05 ± 12.63	11.27 ± 12.4	10.86 ± 13.27
Partner				
Yes	46 (39.7%)	14 (12.1%)	47 (20.5%)	20 (8.7%)
No	16 (13.8%)	40 (34.5%)	55 (24%)	107 (46.7%)
Living situation				
Community-dwelling	54 (46.2%)	51 (43.6)	92 (40%)	115 (50%)
Nursing home/Assisted living facility	8 (6.8%)	4 (3.4%)	10 (4.3%)	13 (5.7%)
Chronic illness				
Yes	20 (17.1%)	15 (12.8%)	39 (17%)	41 (17.8%)
No	42 (35.9%)	40 (34.2%)	63 (27.4%)	87 (37.8%)
Disability				
Yes	29 (24.8%)	26 (22.2%)	50 (21.8%)	43 (18.8%)
No	33 (28.2%)	29 (24.8%)	52 (22.7%)	84 (36.7%)
Satisfaction with sexual life				
Neither satisfied nor dissatisfied	15 (12.8%)	12 (10.3%)	21 (9.1%)	48 (20.9%)
Very dissatisfied/ Dissatisfied	10 (8.5%)	16 (13.7%)	7 (3.0%)	10 (4.3%)
Very satisfied/Satisfied	37 (31.6%)	27 (23.1%)	74 (32.2%)	70 (30.4%)
Attitude sexuality *	12.35 ± 4.22	13.93 ± 3.6	14.04 ± 4.02	14.63 ± 4.2
Quality of life				
Neither poor nor good	5 (4.3%)	7 (6.0%)	18 (7.8%)	29 (12.6%)
Very Poor/Poor	3 (2.6%)	2 (1.7%)	6 (2.6%)	7 (3.0%)
Very Good/Good	54 (46.2%)	46 (39.3%)	78 (33.9%)	92 (40.0%)
Lifetime sexual violence				
Yes	23 (19.7%)	16 (13.7%)	60 (26.1%)	60 (26.1%)
No	39 (33.3%)	39 (33.3%)	42 (18.3%)	68 (29.6%)

* Attitudes towards sexuality in later life were evaluated with the six first questions from the Aging Sexual Knowledge and Attitudes Scale (ASKAS), rescaled from 7-point to 5-point Likert scale

Sexual satisfaction was significantly associated with the participants' birth sex (X^2 (2) = 11.47, p = .003), with men more likely to be (very) dissatisfied. Men also had a higher likelihood of being in a relationship (X^2 (1) = 33.67, p < .001) compared to women. Finally, SV was also significantly associated with birth sex (X^2 (1) = 35.17, p < .001), with women more likely to have experienced SV during their lifetime. Information on the prevalence of lifetime SV in older adults can be found elsewhere[42].

Scores regarding attitudes on sexuality in later life were significantly higher for women than for men (95% CI [-1.82, -0.38]), t(502) = -3.01, p = .003, d = 0.28), reflecting less permissive attitudes. Other sexuality-related variables were not significantly different between men and women.

Among the 147 respondents that reported suffering from a chronic illness, 100 also reported a disability. Most answers included multiple diseases or disabilities. Therefore, it is difficult to provide an accurate summary of chronic illnesses, but the main findings are summarised in Table 4.

Table 4. Chronic illness and disability of the participants classified with the ICD-11

ICD-11 Category	N (%)
Symptoms, signs or clinical findings, not elsewhere classified	76 (23.9)
Diseases of the musculoskeletal system or connective tissue	46 (14.5)
Factors influencing health status or contact with health services	29 (9.1)
Diseases of the circulatory system	27 (8.5)
Diseases of the nervous system	23 (7.2)
Endocrine, nutritional or metabolic diseases	19 (6.0)
Diseases of the respiratory system	18 (5.7)
Diseases of the visual system	15 (4.7)
Unknown[1]	11 (3.5)
Diseases of the digestive system	10 (3.1)
Neoplasms	10 (3.1)
Injury, poisoning or certain other consequences of external causes	8 (2.5)
Diseases of the genitourinary system	8 (2.5)
External causes of morbidity or mortality	5 (1.6)
Diseases of the skin	4 (1.3)
Certain infectious or parasitic diseases	3 (0.9)
Diseases of the ear or mastoid process	3 (0.9)
Conditions related to sexual health	1 (0.3)
Diseases of the immune system	1 (0.3)
Sleep-wake disorders	1 (0.3)

[1] Answers that could not be classified into any of the ICD-11 categories were coded as "Unknown"

Predictors associated with sexual activity and physical tenderness

Sexually active participants were approximately four times more likely to have a partner (OR = 4.10, 95% CI [2.46, 6.83]). They were also significantly more likely to report positive sexual satisfaction (OR = 2.14, 95% CI [1.17, 3.93]) and have lower scores (reflecting more permissive attitudes) regarding sexuality in later life (OR = 0.92, 95% CI [0.86, 0.98]). Older men had higher odds of being sexually active than older women, who had 64.3% lower odds of current sexual activity (OR = 0.35, 95% CI [0.21, 0.58]). Other factors that increased the likelihood of sexual activity included younger age (OR = 0.88, 95% CI [0.85, 0.92]) and an absence of disability (OR = 0.47, 95% CI [0.26, 0.84]).

Older adults who had experienced physical tenderness in the previous 12 months were six times more likely to be in a relationship (OR = 6.27, 95% CI [3.63, 10.81]). Living in the community increased the likelihood of experiencing physical tenderness nearly two-fold (OR = 2.23, 95% CI [1.00, 4.96]), and lower scores (reflecting more permissive attitudes) regarding sexuality in later life (OR = 0.92, 95% CI [0.86, 0.98]).

Other predictors (including lifetime sexual violence) did not significantly contribute to the models. The results of both logistic regression analyses are presented in Table 5.

Table 5. Factors associated with sexual activity (N = 511) and physical tenderness in the previous 12-months (n = 347)

	Sexual activity			**Physical tenderness**		
	OR	**95% CI**	***P-value***	**OR**	**95% CI**	***P-value***
Chronological Age	0.88	0.85 – 0.92	< .001	0.99	0.95 – 1.03	0.8
Subjective age difference	1.00	0.98 – 1.02	0.9	0.99	0.97 – 1.01	0.9
Sex at birth						
Female	0.35	0.21 – 0.58	< .001	0.99	0.56 – 1.75	0.9
Male	Reference			Reference		
Partner						
Yes	4.10	2.46 – 6.83	< .001	6.27	3.63 – 10.81	< .001
No	Reference			Reference		
Living situation						
Nursing home/Assisted living facility	Reference			Reference		
Community-dwelling	1.54	0.55 – 4.32	0.4	2.23	1.00 – 4.96	0.048
Chronic illness						
Yes	0.55	0.30 – 1.00	0.053	1.22	0.69 – 2.15	0.481
No	Reference			Reference		
Disability						
Yes	0.47	0.26 – 0.84	0.011	1.67	0.95 – 2.92	0.071
No	Reference			Reference		

Satisfaction with sexual life						
Neither satisfied nor dissatisfied	Reference			Reference		
Very dissatisfied/ Dissatisfied	1.71	0.74 – 3.96	0.2	0.88	0.36 – 2.11	0.7
Very satisfied/Satisfied	2.14	1.17 – 3.93	0.14	1.66	0.93 – 2.94	0.081
Attitude sexuality *	0.92	0.86 – 0.97	0.007	0.92	0.86 – 0.98	0.018
Quality of life						
Neither poor nor good	Reference			Reference		
Very Poor/Poor	0.93	0.25 – 3.50	0.9	1.76	0.53 – 5.83	0.3
Very Good/Good	0.79	0.40 – 1.58	0.5	1.40	0.69 – 2.81	0.3
Lifetime sexual violence						
Yes	1.07	0.65 – 1.74	0.7	1.35	0.81 – 2.24	0.2
No	Reference			Reference		

* Attitudes towards sexuality in later life were evaluated with the six first questions from the Aging Sexual Knowledge and Attitudes Scale (ASKAS), rescaled from 7-point to 5-point Likert scale

Discussion

We studied the prevalence of sexual activity and physical tenderness in older adults aged ≥ 70 years using data from a Belgian study on sexual violence.

Two out of the three hypotheses were confirmed. The first hypothesis, that many older adults in a relationship continue to be sexually active or to experience physical tenderness, was confirmed. Our results showed that 31.3% of older adults reported being currently sexually active, and 47.3% of sexually inactive adults reported having experienced physical tenderness in the previous 12 months. We observed that being in a relationship increased the odds of being sexually active four-fold and the likelihood of experiencing physical tenderness six-fold. Our second hypothesis, that health status (chronic illness or disability) has an impact on older adults' sexuality, was also confirmed. The absence of disability in older adults increases the likelihood of being sexually active. Our third hypothesis, that there is an association between chronological and subjective age and sexual activity or physical tenderness, was not confirmed. Logistic regression analyses showed non-significant results between these factors. When looking for differences between older women and men, we found that men had a higher likelihood of being in a relationship and being (very) sexually dissatisfied compared to women. In addition, scores on attitudes regarding sexuality in later life showed that women were less permissive on this matter than men. The logistic regression analysis showed non-significant results for the impact of lifetime sexual violence on sexual activity or physical tenderness.

This study fills a gap in the research on sexuality in later life, providing data on the prevalence of sexual activity and physical tenderness in older adults aged 70 to 99 years. Our results are consistent with previous research on sexuality in later life[43], although some studies have shown a higher prevalence[14]. However, the mean age of participants in earlier studies were much younger, such as 71.5 years[14] and 72.5 years[20], compared to our study (79 years; SD = 6.5). In our study, sexually active older adults were approximately four times more likely to have a partner, which is in line with previous studies showing that having a partner is correlated with sexual activity[15, 23]. However, other studies have found partnered older adults who are sexually inactive[18] and unmarried, living alone, or single older adults that report sexual activity[16, 18]. Regarding physical tenderness, we found that older adults who had experienced physical tenderness in the previous 12 months were six times more likely to be in a relationship. Since the question regarding physical tenderness was asked only to those who reported not being sexually active, the prevalence of physical tenderness could have been higher. Other predictors of physical tenderness included lower scores (reflecting more permissive attitudes) regarding attitudes toward sexuality in later

life and living in the community. Additionally, healthcare professionals continue to have negative attitudes on later life sexuality, and living in a nursing home can be a barrier to sexual expression[21, 44].

Our study results also showed that women had 64.3% lower odds of being sexually active compared to men, which confirms previous research[17]. There are several possible explanations for these results. First, there is a higher life expectancy and a higher number of women without a partner in later life compared to men[3, 45]. Life expectancy is estimated at 84 years for European women and 78.5 years for European men[3]. Second, women seem to underreport sexual activity[17]. Third, sex *per se* is not necessarily as important in later life, although it remains an important part of relationships and is associated with intimacy and closeness[46, 47]. Previous studies also support the idea of a double standard, ageist and sexist, when it comes to older women and sexuality[48], referring to them as not being sexual despite the growing evidence that older women are sexually active. Finally, according to sexual scripts[49-51], the role of women is to be attractive and seductive[52]. Since the young body is idealised, the idea that sexuality is linked to beauty and youth is maintained[53], and thus older women can internalise societal stereotypes regarding sexuality in later life and conform to these scripts. This could also lead to the less permissive attitudes toward sexuality in later life that was found in our sample of older women compared to men. These less permissive attitudes could also be linked to sexual scripts, given women's role as gatekeepers when it comes to sexuality[52].

In our study, sexually active older adults were also significantly more likely to report positive sexual satisfaction and lower scores (reflecting more permissive attitudes) regarding sexuality in later life. Our findings confirm the results of several previous studies regarding the association between more permissive and positive attitudes toward sexuality in later life and reported sexual activity[15, 20]. Considerable changes in attitudes regarding sexuality in later life over a few generations are notable[54] and one can only hope that attitudes towards sexuality in later life will be seen as normal in the future. Over a period of 30 years, attitudes regarding sexuality in later life have improved, such as higher satisfaction with sexuality, fewer issues with sexual dysfunction, and more positive attitudes toward sexuality among adults aged > 70 years[54]. Papaharitou et al.[55] highlighted that "sexual expression should be a well-informed individual's choice and not the result of societal myths or health professionals' misconceptions".

Other factors that increase the likelihood of sexual activity include younger age and the absence of disability. Our study results showed that being younger is associated with sexual activity, among other factors. Although a few previous studies have reached similar conclusions[19, 20], one recent study[56] revealed that partner availability and better health are associated with sexual activity and not age. Previous

research also highlights that between 51%[18] and 79%[15] of older adults report being in excellent and (very) good health, which is consistent with our findings. The rates of chronic illness reported in our study were lower than those in the Belgian population according to a report by Van der Heyden[57]. Even though the older adults in our study were subjectively younger than their chronological age, no significant association was found between subjective age and sexual activity or physical tenderness.

Overall, older adults, regardless of their sexually active status, reported satisfaction with their sexual life in our study. However, more men were (very) dissatisfied than women. This could be interpreted as a result of sexual scripts[52] together with the possibility of low satisfaction from solitary sexuality. Our question regarding sexual activity referred not only to partnered sexual activity, but also to masturbation. The lack of sexual interest due to the absence of a sexual partner could explain the cessation of partnered and/or solitary sexual activity[58], which could therefore lead to dissatisfaction. Regarding physical tenderness, in our study, older adults who did not report physical tenderness seemed to be the most dissatisfied with their sexual life, compared to those who reported experiencing it. We suggest that dissatisfaction due to a lack of physical tenderness occurs because sexuality and intimacy are important in later life and because one can adjust to a lack of sexual activity[49] better than to a lack of physical tenderness. Affection, expressed by physical tenderness, has been shown to be more important to married older adults than sexual activity[59], with affectionate touch from a partner contributing to one's psychological well-being[60, 61].

One in four older adults are sexually active, while more than 40% of sexually inactive older adults and 47% of those who report an absence of physical tenderness indicate not being satisfied with their sexual life. It is not evident whether these older adults discuss their dissatisfaction, with whom it is discussed, the expectations of the discussion, and attitudes towards the solutions provided, if that is the case. Older adults have reported that a lack of discussion regarding sexual health in later life can have a negative impact on their ability to have a satisfying sexual life[62, 63]. Although healthcare professionals recognise the importance of sexuality in later life, negative attitudes, a lack of knowledge on the topic, and a general consideration that this is outside their scope of practice persist, along with healthcare providers' fear of asking questions hampers interventions for older patients[10, 64]. Since older adults may also fear not being taken seriously and may be concerned about interactions between medicines prescribed for sexual issues and those they are already taking for other conditions, when they seek help, they report a lack of any resolution[65]. Healthcare professionals therefore need training to increase their comfort with raising this topic with older patients, and sexual education programs should focus on different ages, not just on

youth[11]. Policies, practice, research, and society all influence each other[9], and a more positive approach to sexuality in older adults is needed to increase acceptance of sexuality in later life. Our findings provide further support for previous recommendations that healthcare professionals need training to reassess their beliefs about sexuality in later life and improve their communication with older patients on this topic[11]. We recommend the inclusion of a routine enquiry on sexuality for all older adults who present at any healthcare service in order to reduce the fear for both older patients and healthcare professionals regarding discussing sexuality[66].

When investigating lifetime SV, we found that women were more likely to have experienced sexual violence than men. However, SV was not significantly associated with sexual activity or physical tenderness in our analysis. This could be explained by the lack of sexual education older adults received during their younger years[67] due to the different perceptions of sexuality at that time[52], and thus they may not have perceived their experiences as sexual violence. Sexual mistreatment towards older adults, as defined by Canadian researchers[68], is divided into sexual violence, and sexual neglect. Our study used the WHO definition of SV, which was extended to include sexual neglect. Sexual neglect is defined as "a failure to provide privacy, failure to respect a person's sexual orientation or gender identity, treating older adults as asexual beings and/or preventing them from expressing their sexuality, etc."[68].

On average, participants indicated having approximately three sexual partners during their lifetime (3.4 ± 6.9), and more than half of them reported being in a relationship. This is in line with previous research that showed that older adults who had one sexual partner in their lifetime were almost twice as likely to be in a sexual relationship, relative to those who had more than one sexual partner in their lifetime[18]. This begs the question of what the results of this study will look like in 30 years, based on a potentially higher number of lifetime sexual partners.

Strengths and Limitations

One of the strengths of this study is its representativeness of the current sexual activity prevalence in Belgium regarding older adults and sexuality in later life. This could serve as a starting point for further research on the development of tailored sexual health policies in later life to raise awareness of sexual activity and develop tailored approaches to care. Another strength is the inclusion of adults aged > 85 years. Previous research in Belgium has mainly assessed older adults aged ≤ 75[23], and the oldest participants worldwide have only been aged 80[19] or 85 years[13, 30]. Our study included older adults aged between 70 and 99 years, half of whom were aged ≥ 80 years (mean age, 79 years; SD=6.5).

We also explored sexual activity beyond intercourse, referring to different forms of sexual expression, such as partnered penetrative and non-penetrative sex, as well as solitary sexual activity. Furthermore, since earlier studies have suggested that sexual activity in older adults is underestimated if only the frequency of sexual intercourse is taken into consideration[30, 69], our study questions included physical tenderness as well. Another strength of the study was the use of random clustered sampling, since many previous studies have used convenience sampling. Participants were selected via a "random walk" procedure. Face-to-face interviews have proven to be the best way of collecting data in terms of minimising the drop-out rate and increasing the quality of the data, especially when exploring sensitive topics such as sexual behaviour[70]. Our study included community-dwelling older adults and older adults living in nursing homes or assisted living facilities. Although we did not investigate non-heterosexual orientations, we included older adults who identified as non-heterosexual. Older people experience different living situations, such as being in a relationship and living apart and being in a relationship without being married[71]. Accordingly, and per Freak-Poli's[56] study recommendations, we enquired about partner status and not marital status in our questionnaire.

One of the main limitations of our study was the sample size. As these results were based on the UN-MENAMAIS national study on sexual violence, the estimated sample size based on the power analysis was 845 participants. Due to the measures taken by the Belgian Government in March 2020 regarding COVID-19, the data collection had to be stopped prematurely. However, the sample comprises a valid representation of the Belgian population aged ≥ 70 years[33]. Another limitation was that we asked all participants if they were sexually active ("Are you sexually active?") but asked only the sexually inactive participants about physical tenderness in the previous 12 months; therefore, the prevalence of physical tenderness could have been higher. Another possible limitation of this study was the lack of questions regarding participants' interest in sexual activity or physical tenderness[7] and sexual thoughts[69]. Although we examined attitudes toward sexuality in later-life, we were not able to use the entire attitude scale of the ASKAS[38] as we limited the enquiry to six questions to reduce respondent fatigue and drop-out rates.

Future research

Future research should question sexuality as a broad concept, including the meaning of sexuality in later life for older adults, as well as going beyond sexual activity and physical tenderness to examine more in-depth aging sexual knowledge and attitudes toward sexuality in later life, pleasure, emotional intimacy, different dimensions of quality of life, emotions related to sexuality, and relationship satisfaction. Considering older adults to be asexual could be interpreted as an act of violence; therefore, sexual neglect

should also be explored in future research. Future research could also explore the link between different lifestyle factors and sexual activity status.

Conclusions

To the best of our knowledge, this is the first study to explore sexual activity and physical tenderness in older adults in a sample of adults aged between 70 and 99 years. We found that a third of the older adults interviewed were sexually active, and almost half of sexually inactive older adults expressed having experienced physical tenderness in the previous 12 months. Regardless of their sexual activity status, older adults reported being (very) satisfied with their sex life and having a (very) good quality of life. These results represent evidence of sexual activity and physical tenderness in older adults and could be used as an opportunity for developing sexual health policies in later life, campaigns to increase awareness of sexuality in later life, rejecting the 'asexual older adult' stereotype, opening the discussion between healthcare professionals and older patients on sexuality in old age, and tailoring information and care to the sexual needs of older adults.

Acknowledgments

The authors would like to thank Lotte De Schrijver, Joke Depraetere, and Dr. Nicolas Berg for their contributions and advice during the development of the study; Sabine de Moor for her contribution to programming; Irina Visan for her input on the Twitter message; and Evelyn Schapansky for her contribution to the database preparation.

Authorship statement

Conceptualization, A.C.I., S.A., A.N., M.B., C.V., I.K., and L.N.; Methodology, A.C.I., A.N., M.B., C.V., I.K., and L.N.; Validation, A.C.I., S.A., A.N., M.B., C.V., I.K., and L.N.; Formal Analysis, A.C.I. and B.H.; Investigation, A.C.I., B.H., and A.N.; Data Curation, B.H.; Writing – Original Draft, A.C.I. and B.H.; Writing – Review & Editing, A.C.I., B.H., S.A., A.N., M.B., C.V., I.K., and L.N.; Visualization, B.H.; Supervision, S.A., I.K., and L.N.; Project Administration, I.K.; Funding Acquisition, C.V., I.K., and L.N.

Conflicts of Interest

The authors declare no conflict of interest.

Funding

The research used for this study was subsidised by the Belgian Federal Science Policy via contract BR/175/A5/UN-MENAMAIS. C.V.'s contribution to this work was supported in part by the Research Foundation—Flanders (FWO) Postdoctoral Fellowship funding scheme under Grants 12C0616N to C.V., 12C0619N to C.V.

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Appendix

A. Sexual victimisation measurements (Nobels & Cismaru-Inescu et al., 2021)

Hands-off sexual victimisation (no physical contact):

- *Sexual staring:* Someone stared at me in a sexual way or looked at my intimate body parts (e.g., breasts, vagina, penis, anus) when I didn't want it to happen.
- *Sexual innuendo:* Someone made teasing comments of a sexual nature about my body or appearance even though I didn't want it to happen.
- *Showing sexual images:* Someone showed me sexual or obscene materials such as pictures, videos, directly or over the internet (including email, social networks and chat platforms) even though I didn't want to look at them. This does not include mass mailings or spam.
- *Sexual calls or texts:* Someone made unwelcome sexual or obscene phone calls or texts to me.
- *Voyeurism:* I caught someone watching me, taking photos or filming me when I didn't want it to happen while I was undressing, nude or having sex.
- *Distribution of sexual images:* Someone distributed naked pictures or videos of me directly or over the internet (including email, social networks and chat platforms) when I didn't want it to happen.
- *Exhibitionism:* Someone showed their intimate body parts (e.g., breasts, vagina, penis, anus) to me in a sexual way and/or masturbated in front of me when I didn't want to see it.
- *Forcing to show intimate body parts:* Someone made me show my intimate body parts (e.g., breasts, vagina, penis, anus) online or face-to-face when I didn't want to do it.

Hands-on sexual victimisation

Sexual abuse (physical contact but no penetration):

- *Kissing:* Someone kissed me against my will.

- *Touching in care:* Someone touched my intimate body parts (e.g., breasts, vagina, penis, anus) during care against my will.
- *Fondling/rubbing:* Someone fondled or rubbed up against my intimate body parts (e.g., breasts, vagina, penis, anus) against my will.
- *Forced undressing:* Someone removed (some of) my clothes against my will.

<u>Rape and attempted rape (physical contact with attempted or completed penetration):</u>

- *Oral penetration:* Someone had oral sex with me or made me give oral sex against my will.
- *Attempt of oral penetration:* Someone tried, but did not succeed, to have oral sex with me or tried to make me give oral sex against my will.
- *Vaginal or anal penetration:* Someone put their penis, finger(s) or object(s) into my vagina or anus against my will.
- *Attempt of vaginal or anal penetration:* Someone tried, but did not succeed to put their penis, finger(s) or object(s) into my vagina or anus against my will.
- *Forcing to penetrate:* Someone made me put my penis, finger(s) or object(s) into their (or someone's) vagina or anus against my will.

B. **Measurements of sexual activity and physical tenderness**

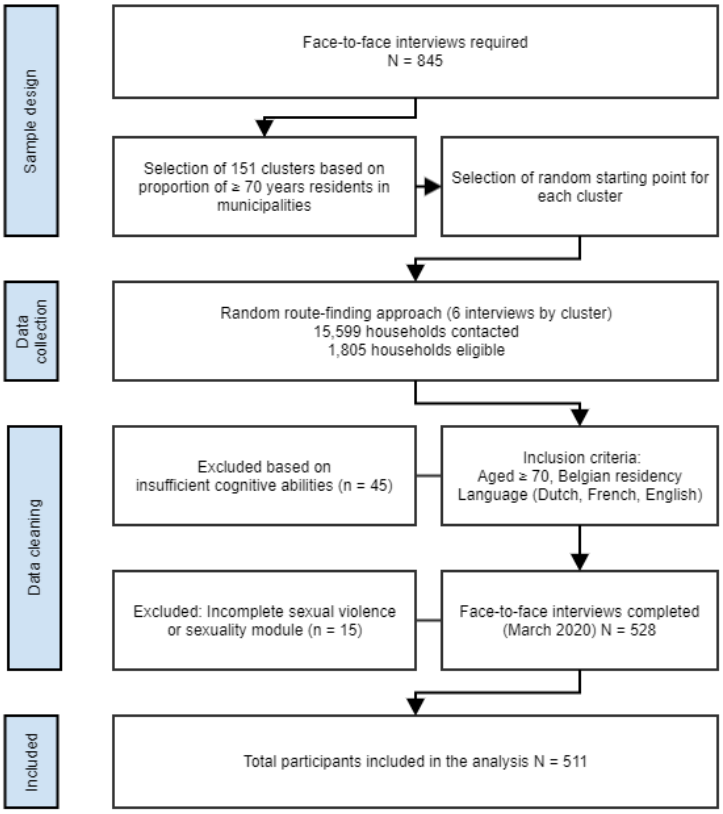
- Are you sexually active? This is not restricted to sexual contact with penetration of the body (also included are for example masturbation, sexual intercourse, oral sex, anal sex, …).

  Yes/ No
- Have you experienced other forms of physical tenderness in the last 12 months (e.g., cuddling, hugging, ...)?

  Yes/ No
- How satisfied are you overall with your sexual life in the last 12 months?

  Very dissatisfied/ Dissatisfied/ Neither dissatisfied nor satisfied/ Satisfied/ Very satisfied

C. **Flow of the questionnaire**



D. Questions from the Aging Sexual Knowledge and Attitudes Scale (ASKAS) used in our survey

Option answers for each statement:

Strongly disagree/ Disagree/ Neither disagree nor agree/ Agree / Strongly agree

- Aged people (65+ years) have little interest in sexuality
- An aged person who shows sexual interest brings disgrace to himself / herself
- Institutions, such as nursing homes, ought not to encourage or support sexual activity of any sort in their residents
- Male and female residents of nursing homes ought to live on separate floors or separate wings of the nursing home
- Nursing homes have no obligation to provide adequate privacy for residents who desire to be alone, either by themselves or as a couple
- As one becomes older (65+ years) interest in sexuality inevitably disappears

Figure 1. Percentages of frequency by age group and gender in the Belgian population (Statbel, 2020) and in the sample.

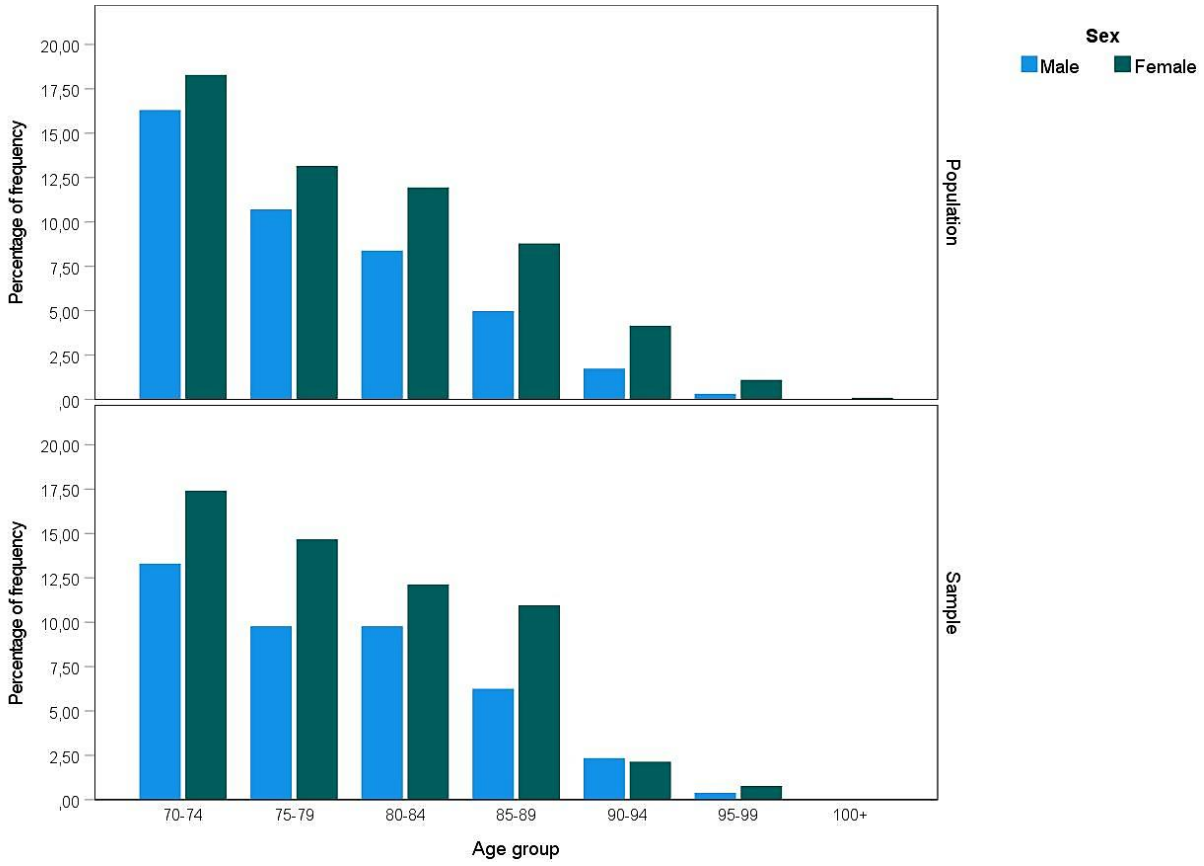


Figure 2. Means of subjective age difference and total ASKAS score by sexual activity (n = 511)*

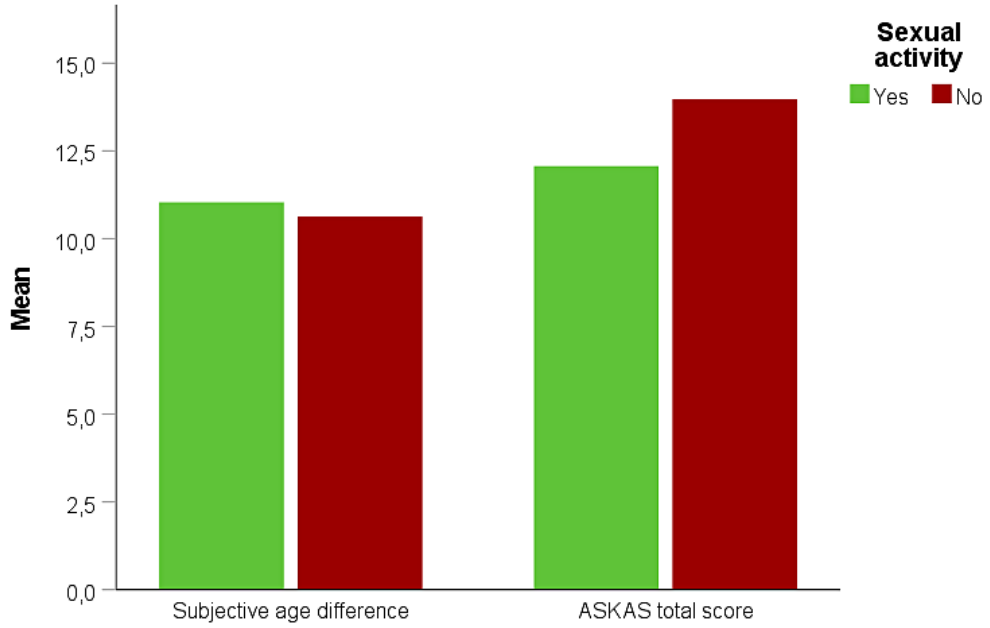


Figure 3. Percentages of living situation, partner and sexual satisfaction by sexual activity (n = 511)*

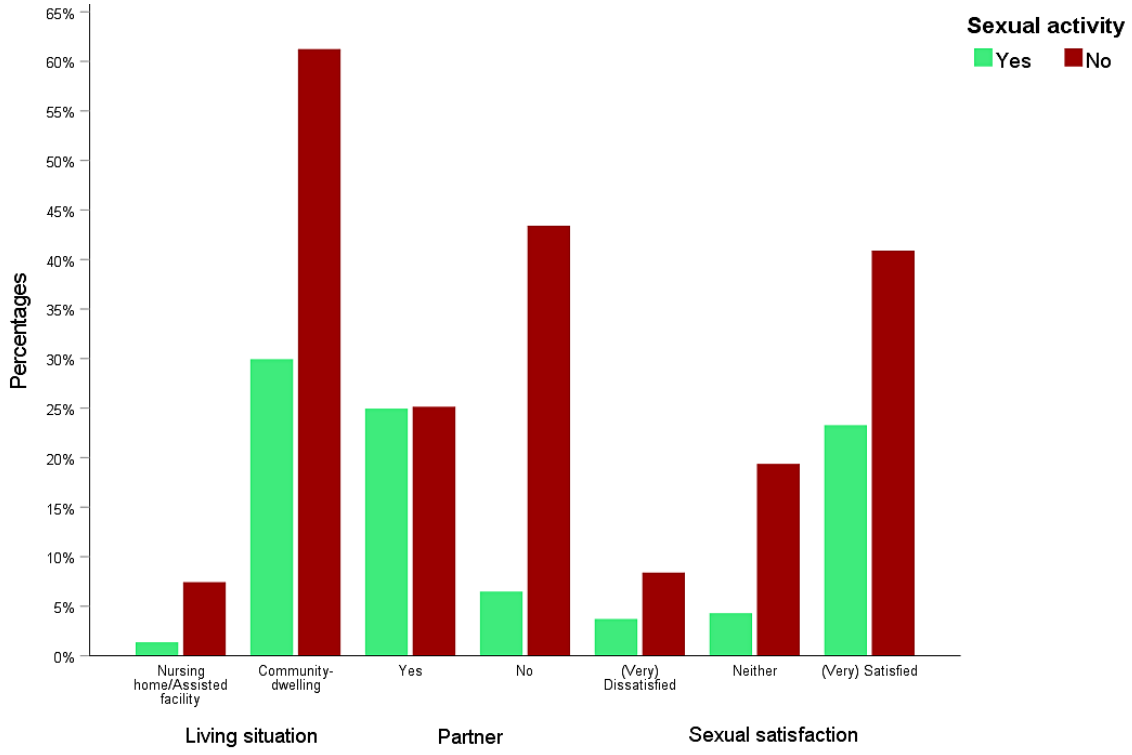
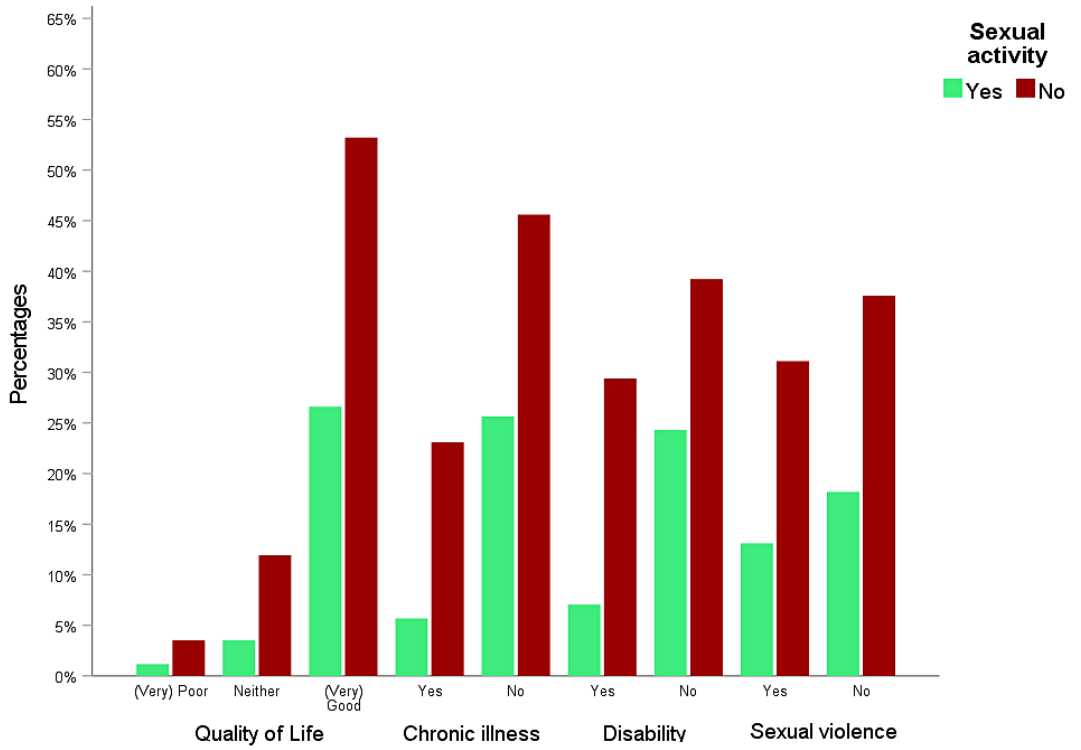


Figure 4. Percentages of quality of life, chronic illness, disability and SV by sexual activity (n = 511)*



*Figures 2, 3 and 4 present associated characteristics by sexual activity status

Figure 5. Percentages of sexual activity and physical tenderness by sex at birth (n = 511)