

The prevalence of sexual activity, and sexual dysfunction and behaviours in postmenopausal woman in Poland

Kamila B. Czajkowska¹, Zbigniew Lew-Starowicz², Monika Szymańska³

¹Institute of Sexology, Polish Sexological Society, Poland

²Psychotherapy and Sexological Rehabilitation Department, The Józef Piłsudski University of Physical Education in Warsaw, Poland

³Medical Sexology and Psychotherapy Department, Medical Centre for Postgraduate Education, Warsaw, Poland

Abstract

Introduction: Despite the aging of the population, there is limited data available about sexual life and behaviours among of postmenopausal and late postmenopausal women. Aim of the study was to assess the prevalence of sexual dysfunction, behaviours, and preferences in the Polish population in 2015.

Material and methods: This observational survey study involved 538 women, of whom 220 were over 50 years old. The main focus was on the differences and changes between older age groups, mainly 50-59 years and over 60 years.

Results: For 80.9% of the women above 50 years old, sex played at least a moderately important role in life. Sex was definitely important and very important for 40.45% of them. Most women over 50 years old (65.5%) were sexually active. Regardless of age, the respondents were more likely to have sexual intercourse several times a month. Less than half of the women over 50 years old (42.7%) realised their sexual fantasies. Women in the group of 50-59 years old statistically less often than younger women declared that the frequency of intercourse they had was too small. There was a statistical tendency showing that women up to 49 years old declared more sexual problems than older women. Women over 50 years old reported fewer problems in comparison to younger women, e.g. less often they claimed that sex is not pleasurable ($p = 0.064$).

Conclusions: The prevalence of sexual activity declines with age, yet a substantial number of woman engage in vaginal intercourse, oral sex, and masturbation even past the seventh decade of life.

Key words: female sexual dysfunction, postmenopause, sexual activity, sexual behaviours.

Introduction

Despite the aging of the population, there is limited data available about sexual life and behaviours among early postmenopausal and late postmenopausal women [1]. In Poland as well as in western countries sexuality is often considered the domain of the young, and the idea of older women having and enjoying sex seems to bother many people [2, 3]. It is still more acceptable for older men than older women to have sexual life. The ideas of older women's sexuality often stem from Victorian times, where the woman was passive in her sex life, and sex was mainly for reproductive purposes [4]. There is a reluctance to talk about sexual activity of mature and older women. Consequently, there is resistance of them to share about sex life, which is considered marginal issue in that age group.

Female sexual function is a complex of physiological, psychological, social, and cultural stimuli, which can affect various aspects of sexual response such as desire, arousal, lubrication, and orgasm [5]. Menopause re-

quires psychological and physical adjustments because of the occurring significant hormonal changes. Sexuality is one of the aspects that undergoes the most profound modifications [6]. Early menopausal transition is marked by increased variability in menstrual cycle length, defined as a persistent difference of seven days or more in the length of consecutive cycles. The late menopausal transition is marked by the occurrence of amenorrhoea of 60 days or longer. Menstrual cycles in the late menopausal transition are characterised by increased variability in cycle length, extreme fluctuations in hormonal levels, and increased prevalence of anovulation [7-9]. The median age of menopause among Caucasian women from industrialised countries range between 50 and 52 years and at onset of the perimenopause is 47.5 y [10]. The average age of women at the time of menopause is 51 y in the US. The most common age range at which women experience menopause' symptoms is 48-55 y [11]. In Poland the overall median age at natural menopause is 51.25 y. Variation in age at menopause

Corresponding author:

Kamila B. Czajkowska, Institute of Sexology, Polish Sexological Society, Stawki 4 C/6, 00-193 Warsaw, Poland, e-mail: kamila_czajkowska@wp.pl

Submitted: 11.08.2016

Accepted: 10.10.2016

revealed the age range from 45 y to 56 y [12]. The process involves the gradual build-up of ovarian hormonal insufficiency, end of menstruation, and the end of fertile age [13]. Genitourinary syndrome of menopause (GSM) consists of a collection of symptoms and signs associated with a decrease in oestrogen and other sex steroids, involving changes to the labia majora/minora, clitoris, vestibule/introitus, vagina, urethra, and bladder. The syndrome may include genital symptoms of dryness, burning, and irritation; sexual symptoms of lack of lubrication, discomfort or pain, and impaired function; and urinary symptoms of urgency, dysuria, and recurrent urinary tract infections [14, 15]. These changes are not synonymous with the disappearance of sexual needs. The entire early postmenopause phase lasts approximately five to eight years. During that period follicle stimulating hormone (FSH) continues to increase and estradiol continues to decrease until approximately two years after the final menstrual period, after which the levels of each of these hormones stabilise. The late postmenopause is estimated to start about eight years after the final menstrual period [16] and is represented more by changes of the somatic than reproductive systems [7, 14]. Reduced levels of oestrogens and androgen are associated with dramatic alterations in genital tissue structure, including the nerve network, as well as the response to physiological modulators. Furthermore, oestrogen and androgen deficiency is associated with reduced expression of sex steroid receptors and most importantly with attenuated genital blood flow and lubrication in response to pelvic nerve stimulation [17].

A massive and growing market for drugs and devices to treat sexual problems targets older adults, including women. There is limited information about sexual behaviours among older adults and about how sexual activities change with aging and illness [16].

The aim the study was to assess the prevalence of sexual dysfunction, behaviours, and preferences in the Polish population in 2015, as a continuation of the previous studies of Prof. Zbigniew Lew-Starowicz, which were conducted in 1992 and 2005.

Material and methods

Study design

It was an observational survey study that was conducted among 1054 people aged from 18 to over 70 y. The sample was representative for the Polish population. The study involved 538 women, of whom 220 were over 50 years old.

The survey consisted of 82 questions, grouped into the following categories:

- general questions, e.g. sex, age group, marital status, place of residence, etc.,
- early sexual contacts,

- sex life,
- relationships,
- sexual behaviours and preferences.

Due to the study design the menopausal status was defined based on the women's age, only. Therefore, for the purpose of this analysis we focused only on the female population that was stratified to the following age groups of: 35-49 y and over 50 y. The last group was stratified to the subgroups 50-59 y and over 60 y (60-69 y, and over 70 y). The main focus was put on the underlying differences and changes between above age groups, mainly 50-59 y (early postmenopausal) and over 60 y (late postmenopausal).

Data collection

The data was collected via Computer Assisted Web Interviewing (CAWI) between 4 and 15 December 2015. Respondents were members of the Ariadna National Panel, which involves over 100 thousand responders and operates in accordance with the International Code of Ethics ICC/ESOMAR and the General Inspector for Personal Data Protection.

There were no dropouts and all collected data was further analysed.

Statistical analysis

All statistical analysis was performed using IBM SPSS Statistics 22pl. The parameters used to describe quality data were the following: percentage and number of events, and to characterise quantitative data: average, median, standard deviation, minimal, and maximal values. Additionally, normality test and Kolmogorov-Smirnov statistics were performed. Statistical reasoning was based on statistical significance. It was assumed that null hypothesis was not true when $p < 0.05$. Statistical reasoning was based on 95% confidentiality intervals. In order to test correlation between quality variables χ^2 test analysis, column proportions test with Bonferroni amendment; analysis of correlation (correlation coefficient was adjusted to the data analysed), and effect size measurement were performed.

Results

Most women over 50 y lived in villages (33.6%) and in cities of 51-500 thousand inhabitants (28.2%). In small and middle size cities lived 23.6% of those women. Most of them were married (57.7%). Most widows were observed in the group over 60 y (22.5%), and besides that there were no statistically significant differences regarding marital status among the women over 50 y. Most of them had children (90.9%). In terms of education, 47.3% of them had secondary education and 31.4% had higher education. Most women (81.2%) were catholic and

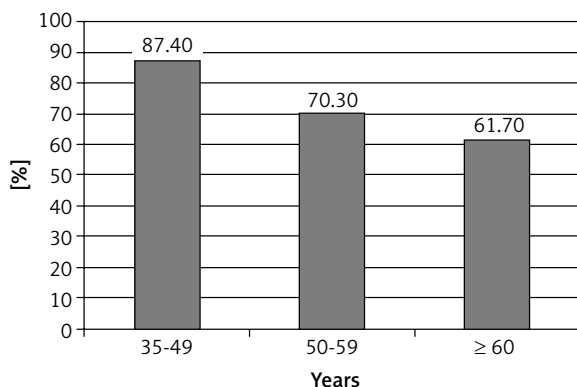


Fig. 1. Relation between age and sexual activity

18.8% had a neutral attitude to religion or were atheists or agnostics. Over 1/3 of the studied population (37.3%) had a permanent job, 4% had a part time job, and 5.45% were unemployed.

In terms of health issues 54.1% of women over 50 y claimed to be rather healthy, 19.5% rather ill, 14.5% healthy, and 7.3% sick or very sick. In the group of women over 60 y cardiovascular problems and osteoarticular problems were more often observed. Women in the group of 50-59 y declared problems with the endocrine system, more often than other age groups. There was no significant difference between the age groups and the prevalence of health problems, besides the fact that women aged 35-49 y were less likely to declare that they suffered from chronic diseases than other age groups and took less medication. In addition, in none of the analysed age groups disease diagnosis or taken medication caused change in their sexual life.

Sexual life

Most women over 50 y were heterosexual 82.7% (12.3% had problems or refused the answer).

Sex played at least a moderately important role in life for 80.9% of the women above 50 y and for 40.45% it was definitely important and very important.

Almost 2/3 of women over 50 y claimed to feel sexually attractive and rather attractive (60.9%), while 15% of them felt rather not and 5.9% definitely not attractive. There were no significant differences among the subgroups.

Most women over 50 y (65.5%) were sexually active, but they were less active comparing to younger women ($\chi^2 (2) = 23.12, p < 0.001$). Graphically, the results are shown below (Fig. 1).

Among inactive women over 50 y, 81.3% of them was inactive for over a year. There were no statistically significant differences in the subgroups.

Among women between 50 and 59 y ($n = 25$) the reasons for not being active were the following: lack of the partner (40%), lack of interest in sex (24%), health issues (16%), and lack of partner's interest in sex (1.6%). Among health issues most women had cardiovascular (22.2%) and osteoarticular (40.7%) problems. Endocrine system problems were reported by 14.81%, urinary tract issues by 7.41%, and gynaecological problems by 3.7% of them.

In the age group over 60 y ($n = 38$), lack of the partner (57.9%) was the main reason for being sexually inactive. Lack of interest in sex was reported by 34.2% and lack of partner's interest in sex by 10.5% of the subgroup. Issues with health were not the important reason for being inactive and were reported only by one woman (2.6%). In regards of health issues, sexually inactive women over 60 y reported mainly cardiovascular (36.7%) and osteoarticular problems (36.7%). Issues with endocrine system were reported by 6.12%, gynaecological problems 6.12%, and urinary tract 18.37% of the women.

Generally, 60.5% of sexually inactive women over 50 y claimed that sex played at least a moderately significant role in their life. In addition, 39.4% of those women were married or had a partner relationship, and 30.3% of women over 50 y felt the desire to have sexual intercourse at least once a month. There were no significant differences among the subgroups. It could be assumed that lack of a partner was the main reason for stopping sexual activity among women over 50 y.

Tab. I. The relation between age and feeling the desire for sexual intercourse

	Age [years]			Total
	35-49	50-59	≥ 60	
Several times a day	0.7% ^a	–	0.9% ^a	0.6%
Every day	8.1% ^a	2.4% ^{a,b}	0.9% ^b	4.2%
Several times a week	36.0% ^a	23.5% ^{a,b}	21.1% ^b	27.8%
Once a week	12.5% ^a	15.3% ^a	16.7% ^a	14.6%
Several times in a month	25.7% ^a	25.9% ^a	26.3% ^a	26.0%
Once a month	7.4% ^a	12.9% ^a	11.4% ^a	10.1%
Several times in a year	3.7% ^a	10.6% ^b	7.9% ^{a,b}	6.9%
I don't feel the need	5.9% ^a	9.4% ^{a,b}	14.9% ^b	9.9%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

Tab. II. The relation between age and frequency of intercourse

	Age [years]			Total	
	35-49	50-59	≥ 60		
How often do you have sexual intercourse?	Several times a day	1.7% ^a	–	–	0.8%
	Every day	3.4% ^a	–	–	1.5%
	Several times a week	33.9% ^a	29.7% ^a	22.8% ^a	29.5%
	Once a week	13.6% ^a	21.9% ^a	21.5% ^a	18.0%
	Several times in a month	31.4% ^a	32.8% ^a	25.3% ^a	29.9%
	Once a month	4.2% ^a	10.9% ^a	7.6% ^a	6.9%
	Several times in a year	6.8% ^a	3.1% ^a	16.5% ^b	8.8%
	I don't know/hard to say	5.1% ^a	1.6% ^a	6.3% ^a	4.6%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

Tab. III. The relation between age and frequency of intercourse

	Age [years]		Total	
	60-69	≥ 70		
How often do you have sexual intercourse?	Several times a week	12.8% ^a	32.5% ^b	22.8%
	Once a week	23.1% ^a	20.0% ^a	21.5%
	Several times in a month	33.3% ^a	17.5% ^a	25.3%
	Once a month	7.7% ^a	7.5% ^a	7.6%
	Several times in a year	15.4% ^a	17.5% ^a	16.5%
	I don't know/hard to say	7.7% ^a	5.0% ^a	6.3%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

Tab. IV. The relation between age and frequency of the sexual intercourse

	Age [years]			Total	
	35-49	50-59	≥ 60		
What do you think about the number of times of sexual intercourse in the past 12 months?	Not enough	31.9% ^a	17.6% ^b	22.7% ^{a,b}	24.9%
	Adequate number	50.4% ^{a,b}	54.9% ^b	40.6% ^a	48.0%
	Too many intercourses	3.7% ^a	1.1% ^{a,b}	–	1.7%
	I don't know/hard to say	14.1% ^a	26.4% ^b	36.7% ^b	25.4%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

Among the sexually active women, significant differences were observed regarding the desire for sexual intercourse between the subgroups ($\chi^2(14) = 26.79$, $p < 0.05$). Women in the group 35-49 y were more likely to feel the desire to have intercourse every day or several times a week in comparison to women aged over 50 y. In addition, women in the subgroup over 60 y more often declared that in general they do not have such feelings (Table I). Moreover, it was observed that women over 70 y much more often declared to feel the desire for sexual intercourse several times a week (32.5%) compared to women aged 60-70 y (12.8%).

There were no significant differences among analysed groups in regards to the frequency of having intercourse, beside the respondents over 60 y more often than other groups declaring that sexual intercourse took place several times a year ($\chi^2(14) = 25.22$, $p < 0.05$)

(Table II). Regardless age, the respondents were more likely to have sexual intercourse several times in a month.

After stratification of the group over 60 y into subgroups, no relation between age and frequency of sexual intercourse was found besides women over 70 y more frequently declaring to have sexual intercourse several times a week compared to women aged 60-69 y ($\chi^2(5) = 5.68$, $p > 0.05$) (Table III).

Regarding the assessment of intercourse frequency, women in the group of 50-59 y statistically less often than younger women declared that the frequency of intercourse that they had is too low. Women in groups 50-59 y and over 60 y more often than younger ones had problems with the assessment (Table IV).

No significant differences between all analysed groups were found in terms of the frequency of hav-

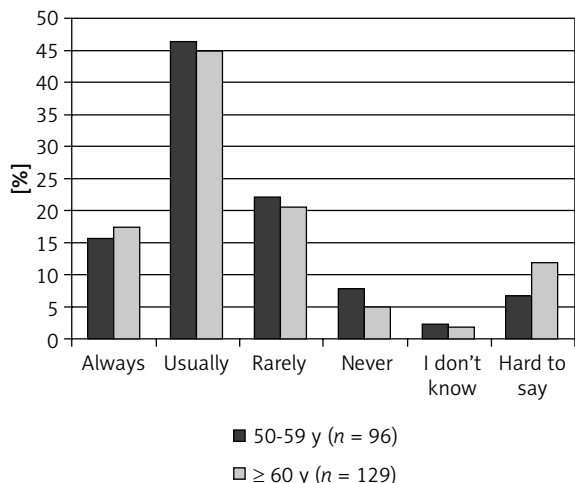


Fig. 2. The relations between age and having orgasm during sexual intercourse

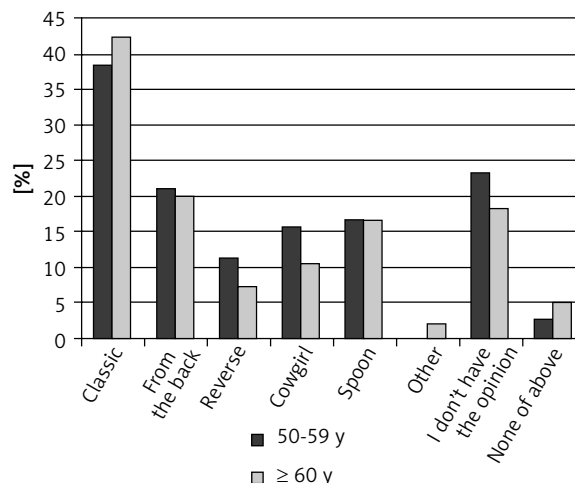


Fig. 3. The relation between age and sexual positions

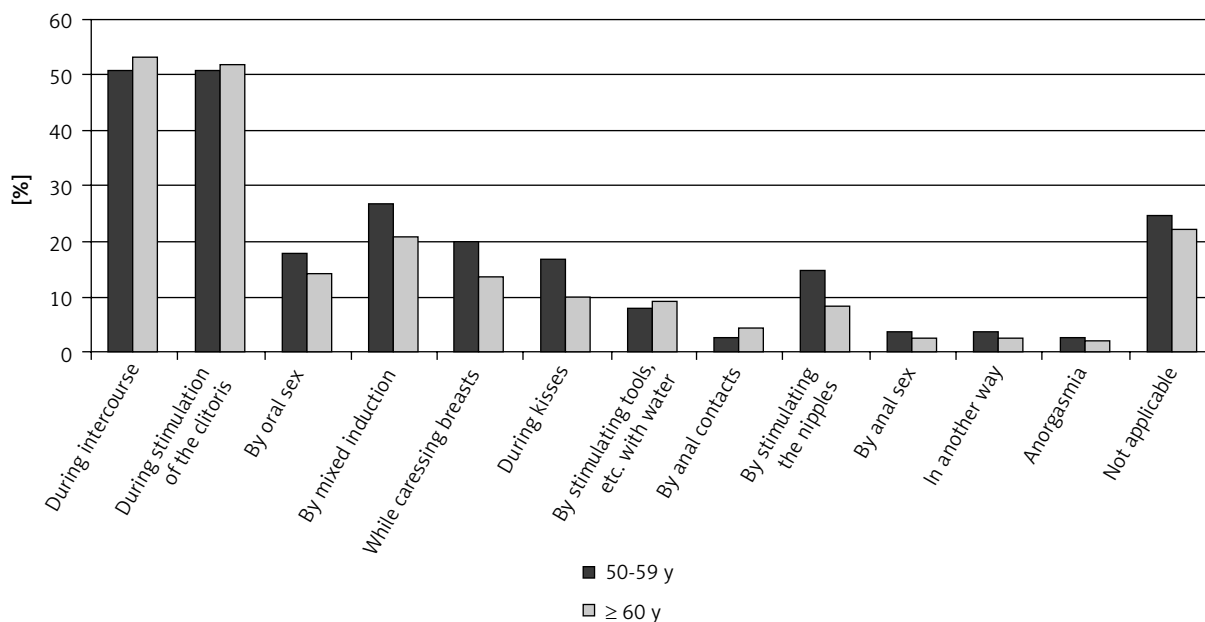


Fig. 4. The relation between age and how the women climax

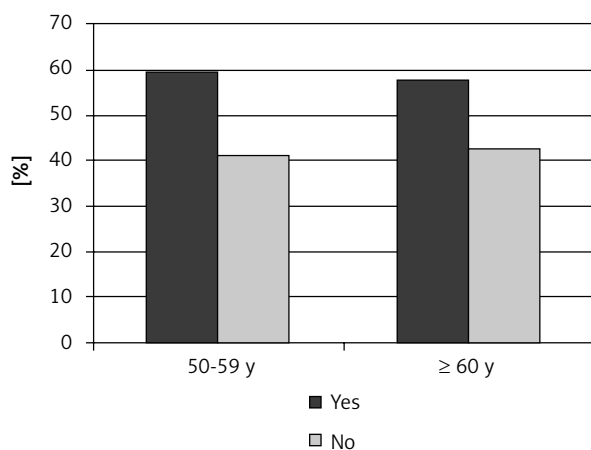


Fig. 5. Relation between age and masturbation

ing orgasm as well as favourite positions during intercourse. The data regarding groups 50-59 y and over 60 y are presented in Figures 2 and 3.

There were also no statically relevant differences regarding how the women reach orgasm among all analysed groups. The data regarding groups 50-59 y and over 60 y are presented in Figure 4.

There were also no statistically relevant differences regarding masturbation and its frequency among all analysed groups. The data regarding groups 50-59 y and over 60 y are presented in Figures 5 and 6.

The results showed that with age, women have fewer sexual fantasies ($\chi^2 (2) = 12.52, p < 0.01$) (Table V).

However, after comparing age subgroups; 60-69 y and over 70 y, it could be observed that women over 70 y were

significantly more likely to have sexual fantasies than women aged 60-70 y ($\chi^2 (1) = 4.08, p < 0.05$) (Table VI).

Moreover, all the age groups did not differ in terms of the content and with whom they realise the sexual fantasies. Less than half of the women over 50 y (42.7%) realised their fantasies, 78.9% among them with their husbands and partners and 26.32% with their lovers.

Regarding use of sex tools/toys and watching pornographic movies, there were no significant differences among all the analysed groups. The data regarding groups 50-59 y and over 60 y are presented in Figures 7 and 8. In addition, there was a trend showing that women over the age of 70 y were much more likely to use sexual tools (15.9%) than women aged 60-70 y (6.1%, $\chi^2 (1) = 3.21, p = 0.073$).

There were no differences between the age groups women 50-59 y and over 60 y with regard to what they find to be pleasurable. After the stratification group 60 y into subgroups it could be observe that women over 70 y compared to women aged 60-70 y more often indicated as pleasurable: masturbation, watching pornography, and unusual places to have sex (Table VII).

In terms of the sexual problems, there were no significant differences between the analysed groups. There was a tendency that women up to 49 y declared more sexual problems than older women. Women over 50 y reported fewer problems, e.g. less often they claimed that sex is pleasurable ($p = 0.064$). Moreover, women over 70 y more often reported problems with climax and feeling disgust for sex and less often claimed muscular contraction that prevents intercourse or climaxing too quickly (Table VIII).

In the case of occurrence of sexual problems, women over 50 y less often than younger groups sought help ($\chi^2 (2) = 6.75, p < 0.05$). Among those who searched for help, there was no significant difference in where or how they sought the support.

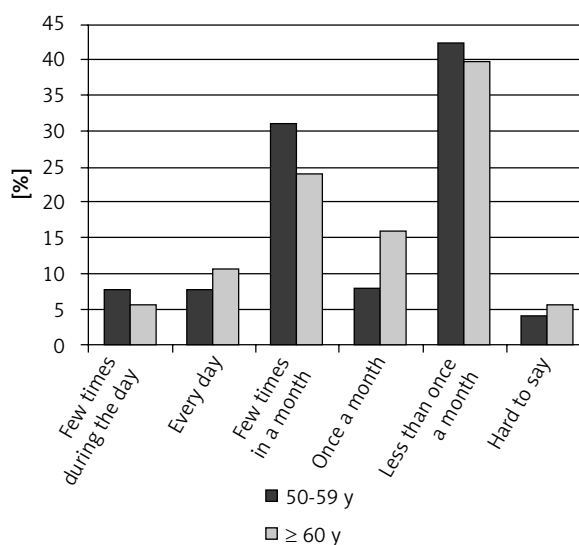


Fig. 6. Relation between age and frequency of masturbation

Relationships

Most women over 50 y reported having a partner (70.5%). The number of women declaring to have a partner decreased with age ($\chi^2 (2) = 6.92, p < 0.05$) (Table IX). Most of the women over 50 y had had a partner for more than five years (89.2%).

While analysing the age groups no significant differences were found in terms of emotional and physical bond with the partner as well as in regards to assessment of the number times of sexual intercourse. The data regarding groups 50-59 y and over 60 y are presented in Figures 9-11.

No significant differences were found between the sexual intercourse outside the relationship. Compared age groups did not differ in the prevalence of such sexual contact – most (34.2%) women over 50 y had 2-4 sexual partners, 28.7% had one partner and 23.7% had

Tab. V. The relation between age and the occurrence of sexual fantasies

		Age [years]			Total
		35-49	50-59	≥ 60	
Do you have sexual fantasies?	Yes	59.3% ^a	42.9% ^b	38.8% ^b	47.80%
	No	40.7% ^a	57.1% ^b	61.2% ^b	52.20%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

Tab. VI. The relation between age and the occurrence of sexual fantasies

		Age [years]		Total
		60-70	≥ 70	
Do you have sexual fantasies?	Yes	30.3% ^a	47.6% ^b	38.80%
	No	69.7% ^a	52.4% ^b	61.20%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

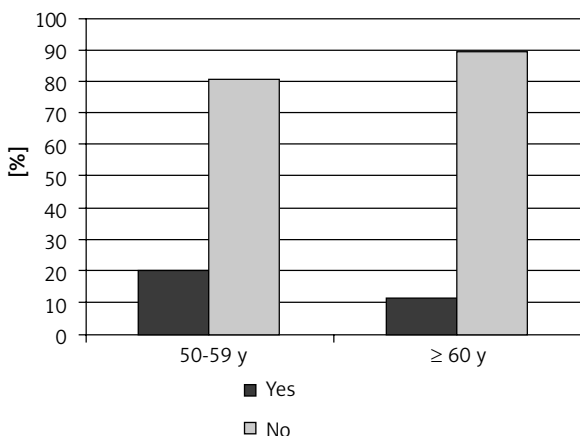


Fig. 7. Relation between age and the use of sex tools

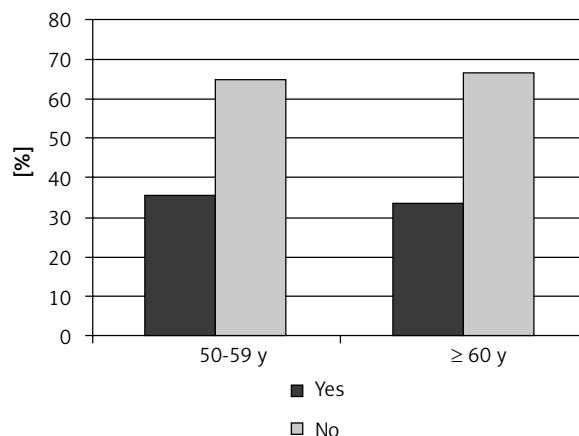


Fig. 8. Relation between age and watching pornographic movies

Tab. VII. The relation between the age and what women find pleasurable

	Age [years]	
	60-70	≥ 70
Masturbation	15.2%	22.2%
Pornography	3.0%	7.9%
Vibrators, erectors etc.	7.6%	9.5%
Oral sex	21.2%	25.4%
Anal sex	3.0%	4.8%
Exchange of partners	0.0%	1.6%
Intercourse among three people	1.5%	1.6%
Unusual sexual positions	19.7%	20.6%
Unusual places to have sex	12.1%	25.4%
Group sex	1.5%	0.0%

a regular partner outside the relationship. The data regarding groups 50-59 y and over 60 y are presented below (Fig. 12).

Discussion and Conclusions

The results of the study indicate that the majority of mature and older women are engaged in spousal or other intimate relationships and consider sexuality as an important part of life [18]. The prevalence of sexual activity declines with age, yet a substantial number of women engage in vaginal intercourse, oral sex, and masturbation, even past the seventh decade of life. In Poland 65.5% of women above 50 y and 61.5% above 60 y were sexually active. Regardless of age, the respondents were more likely to have sexual intercourse several times in

Tab. VIII. The relation between age and reported sexual problems

Problems declared by a respondent	50-59 y	60-70 y	≥ 70 y
Reduced sexual needs/lack of interest in sex	31.25%	33.30%	37.50%
Rarely climaxing	18.75%	17.90%	27.50%
Pain during intercourse	12.50%	15.40%	15.00%
Difficulty with lubrication	18.75%	17.90%	20.00%
Anorgasmia	12.50%	17.90%	12.50%
Sex not pleasurable	7.81%	5.10%	7.50%
Climaxing too quickly	7.81%	5.10%	5.00%
Feeling disgust for their partner	3.13%	2.60%	2.50%
Feeling disgust for sex	3.13%	0.00%	5.00%
Muscular contraction that prevents intercourse	3.13%	5.10%	0.00%
Feeling disgust for men / women	3.13%	0.00%	0.00%
Excessive sexual needs	0.00%	5.10%	2.50%

Tab. IX. The relation between age and having regular partner

		Age [years]			Total
		35-49	50-59	≥ 60	
Do you have a partner?	Yes	86.4% ^a	79.1% ^{a,b}	73.6% ^b	80.00%
	No	13.6% ^a	20.9% ^{a,b}	26.4% ^b	20.00%

^{a,b}Each letter in the index denotes the subset of the age category; the proportions of the column do not differ significantly from each other at 0.05

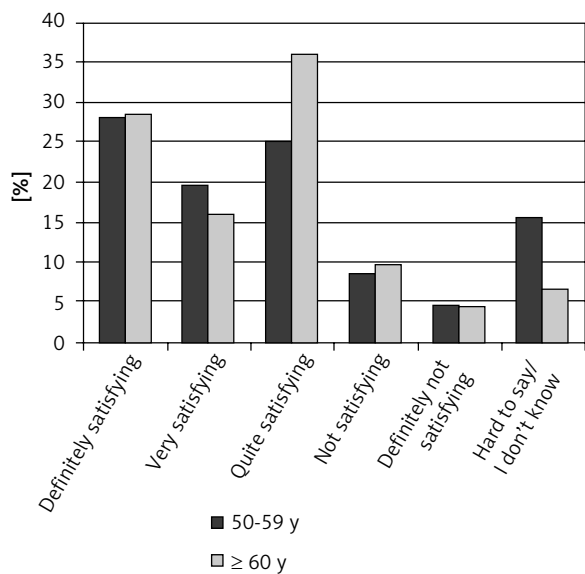


Fig. 9. Relation between age and emotional contact with the partner

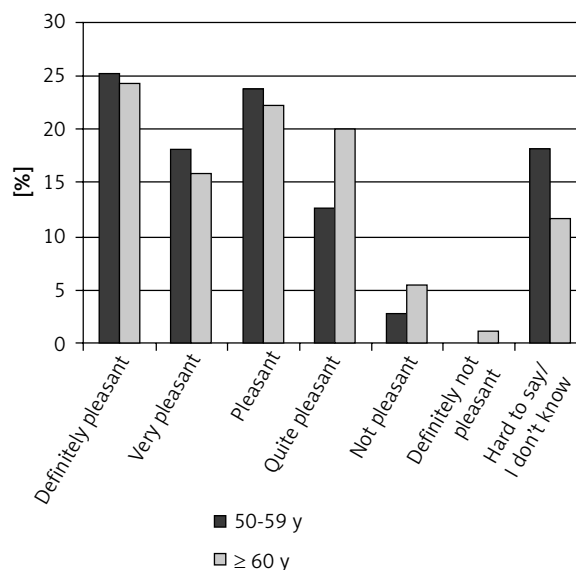


Fig. 10. Relation between age and sexual contact with the partner

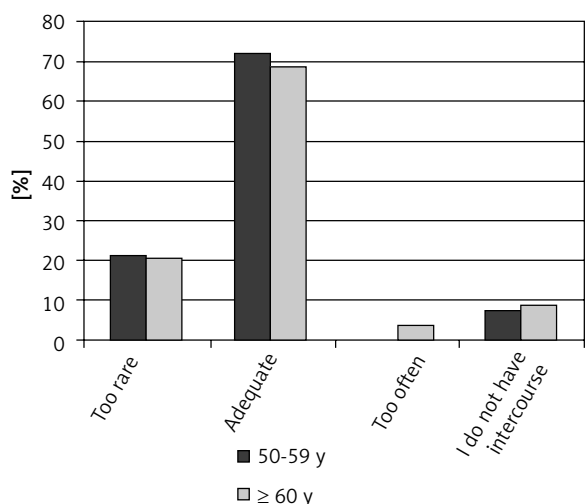


Fig. 11. Relation between age and frequency of intercourse

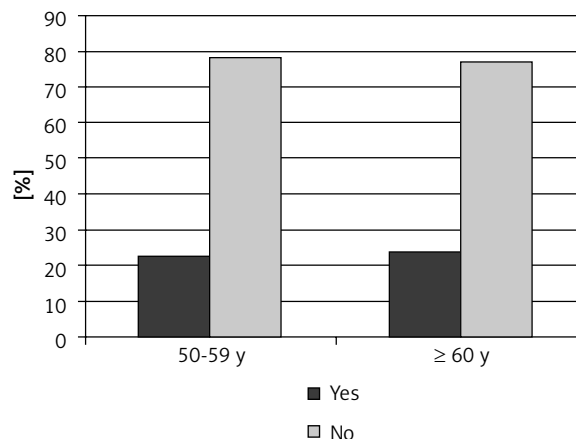


Fig. 12. Relation between age and occurrence of Intercourse outside the relationship

a month. Women in groups 35-49 y and 50-59 y had sexual intercourse more often several times a week (33.9% and 29.7%, respectively) comparing to women above 60 y (22.8%). Though women above 60 y reported to have sexual intercourse once a week more often comparing to younger women 35-49 y (21.5% vs. 13.6%). In both age groups, 50-59 y and over 60 y, the main reason for being sexually inactive was the lack of a partner: 40% and 57.9%, respectively. Health issues were more often reported as a reason for being sexually inactive in the group 50-59 y (16%) than in over 60 y (2.6%), probably due to adapting to menopausal status, which is associated with changes in vaginal physiology, thus contributing changes in sexual function [19]. Moreover, the mature and older women claimed that health problems and medicines they had been taking did not have an impact on their sexual life. In addition, the preva-

lence of sexual problems was not higher in age groups 50-59 y and 60 y comparing to younger women. Women over 50 y reported fewer problems in comparison to younger women, e.g. less often they claimed that sex is not pleasurable ($p = 0.064$). The often-reported problems were lack of lubrication (20%) and decreased or lack of sexual need, but the prevalence was similar in all analysed groups. Moreover, women over 70 y more often reported problems with climaxing and feeling disgust for sex. They less often claimed muscular contraction that prevents intercourse or climaxing too quickly. The disturbing fact is that, with age, women do not seek help from professionals. They might fear there is a lack of social acceptance of discussing the healthy possibilities and experience of sexual behaviour [20].

The study had some limitations – only women using the Internet were involved. It would be difficult to obtain the data, due to the number of questions and the

fact that people remain silent about their problems. As with most sexuality research, an additional limitation of our study is the fact that the data were self-reported, although the interview methods are well accepted as being valid. Moreover, we assessed only specific sexual problems and asked general questions about health problems, as it was a population based study. Therefore, our findings are likely to underestimate the extent of sexual problems in the older female population. Prospective, longitudinal data are needed to better understand the associations between sexual problems and future sexual activity or relationships.

Our findings are promising, showing that mature and older women are open-minded, confident, and can enjoy sexual life. It could be concluded with the following from J. Krzyżowski: "Although the frequency of sexual activity in older age is lower and decreases with age, the desire for sex and the desire to rejoice is not always lower" [21].

Acknowledgements

The project was supported by Polpharma SA and by Zymetria Sp. z o.o., which was responsible for the data collection.

Disclosure

Authors report no conflict of interest.

References

- Salonia A, Giraldi A, Chivers ML, et al. Physiology of women's sexual function: basic knowledge and new findings. *J Sex Med* 2010; 7: 2637-2660.
- Stankowska I. Funkcjonowanie seksualne człowieka w okresie starzenia się i starości. *Przeгляд Terapeutyczny* 2008; 4.
- Fabiś A, Fabiś A. Tabu seksuologii. Wydawnictwo Academica Szkoły Wyższej Psychologii Społecznej, Warszawa 2008.
- Gott M. Sexuality, sexual health and aging. Open University Press, Maidenhead 2005.
- Baldassarre M, Alvisi S, Berra M, et al. Changes in vaginal physiology of menopausal women with type 2 diabetes. *J Sex Med* 2015; 12: 1346-1355.
- Berra M, De Musso F, Matteucci C, et al. The impairment of sexual function is less distressing for menopausal than for premenopausal women. *J Sex Med* 2010; 7: 1209-1215.
- Harlow SD, Gass M, Hall JE, et al. Executive summary of the Stages of Reproductive Aging Workshop +10: addressing the unfinished agenda of staging reproductive aging. *Menopause* 2012; 19: 387-395.
- Su HJ, Freeman EW. Hormone changes associated with the menopausal transition. *Minerva Ginecol* 2009; 61: 483-489.
- Harlow SD, Paramsothy P. Menstruation and the menopause transition. *Obstet Gynecol Clin North Am* 2011; 38: 595-607.
- Gold EB. The timing of the age at which natural menopause occurs. *Obstet Gynecol Clin North Am* 2011; 38: 425-440.
- Hormones and Menopause, National Institute on Aging, 2012, <https://www.nia.nih.gov/health/publication/hormones-and-menopause>
- Kaczmarek M. The timing of natural menopause in Poland and associated factors. *Maturitas* 2007; 57: 139-153.
- Szwed A. Biologiczne i kulturowe uwarunkowania klimakterium u kobiet. Monografie Instytutu Antropologii UAM, Poznań 2001.
- Portman DJ, Gass ML. Genitourinary syndrome of menopause: new terminology for vulvovaginal atrophy from the International Society for the Study of Women's Sexual Health and the North American Menopause Society. *J Sex Med* 2014; 11: 2865-2872.
- Stuart-Hamilton I. Psychologia starzenia się. Wydawnictwo Zysk i S-ka, Poznań 2000.
- Lonnée-Hoffmann RA, Dennerstein L, Leher P, Szoeki C. Sexual function in the late postmenopausal: a decade of follow-up in a population-based cohort of Australian women. *J Sex Med* 2014; 11: 2029-2038.
- Traish AM, Botchevar E, Kim NN. Biochemical factors modulating female genital sexual arousal physiology. *J Sex Med* 2010; 7: 2925-2946.
- Lindau ST, Schumm LP, Laumann EO, et al. Study of sexuality and health among older adults in the United States. *N Engl J Med* 2007; 357: 762-774.
- Olejnik M. Średnia dorosłość. Wiek średni. Psychologia rozwoju człowieka. Rozwój funkcji psychicznych. Tom 3. PWN, Warszawa 2006.
- Levine SB. Sexuality in mid-life. Plenum Press, New York 1998.
- Krzyżowski J. Psychogeriatrics. Wyd. Medyk, Warszawa 2004.