



The analysis estradiol levels against sexual desire in perimenopause women in Makassar, South Sulawesi, Indonesia[☆]



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Received 29 May 2019; accepted 15 July 2019

KEYWORDS

Sexual desire;
Nutritional status;
Perimenopause;
Estrogen

Abstract

Objective: The increasing number of older women will undoubtedly lead to the emergence of complaints period toward menopause. The complaints cause discomfort, disruption in daily work, including reduction of sexual desire. This research aims to analyze the levels of hormone estradiol on sexual desire in perimenopause women.

Method: This research design was a cross-sectional study conducted in Makassar City, South Sulawesi. The numbers of the sample were 37 perimenopause women. Data analysis used the Mann-Whitney test.

Results: The results of the research confirmed there is no correlation between estradiol levels and sexual desire of perimenopause women ($\rho = 0.518$).

Conclusion: Our finding confirms that there is no correlation between estradiol levels and sexual desire in premenopausal women, which indicate hormonal factors is not solely determine sexual desire.

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[☆] Peer-review under responsibility of the scientific committee of the International Conference on Women and Societal Perspective on Quality of Life (WOSQUAL-2019). Full-text and the content of it is under responsibility of authors of the article.

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<https://doi.org/10.1016/j.enfcli.2019.07.117>

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Introduction

Currently, there is an increasing number of older women associated with menopause. It was predicted that the total number of postmenopausal women in 2030 would be approximately 1200 million, and the proportion of those living in developing countries will increase about 70.6%. Previous studies reported in India, Turkey, Cambodia, Korea, and Sri Lanka at least 11.8%, 13.5%, 21.5%, 42.6%, and 90.8% of women experiencing premenopausal, 72.2%, 15.5%, 56%, 20.7% and 96.4% experience postmenopausal respectively¹⁻⁵. In the developing country such as America, studies of white, black women, China, and Japan reported 58% premenopausal and 42% perimenopausal.⁶ Meanwhile, in 2025, the number of Indonesian menopausal women will be approximately 35,000,000 participants.⁷ Due to the high number of menopausal women, it is urgent to evaluate the effect of menopause.

The decrease in estrogen related to menopause gives an impact to women, both short-term and long-term. The reduction of estrogen rises the variety of somatic, vasomotor, sexual, and psychological symptoms,⁸ including leading to sleep disorder, attractiveness, and sexual behavior.⁹ Other symptoms reported are related to menopause such as muscular discomfort, physical and mental exhaustion, hot flushes, sweating, irritability, depressive mood, sleep problems, bladder problems, experiencing poor memory, vaginal dryness during intercourse and avoiding intimacy.^{1,3-5} Many of the early changes are associated with vasomotor instability, manifested by hot flushes and night sweats.¹⁰ About 85% of women experience hot flushes at the time of menopause, and this is the most common reason for women to seek medical attention at this time.⁷ Therefore, menopause has wide range associated problems, particularly sexual desire of perimenopause women.

The sexual desire problems among perimenopause women are a significant effect of estradiol reduction of estradiol. Estradiol is formed by conversion of estrone.¹¹ Growth hormone secretion decreases 30–40% after the age of 40 lower than in reproductive age.¹² At this stage of life, women will face many problems and complications from the lack of sex hormones.⁶ It includes disorders of vaginal lubrication in women, no interest in sexual intercourse, dyspareunia, difficulty reaching orgasm, and unpleasant feelings toward sex.^{13,14} Sexual relationships are one of the most critical factors that affect the happiness of marital life, which, if it is not convincing, this will leads to a feeling of failure, defeat, and lack of security.¹⁵ Some of the most frequent sexual disorders are physiological changes in a woman's body, psychological problems including stress, and sexual knowledge. This causes the premenopausal period to be very sensitive, because it is related to changes in the mental health condition of the family.¹⁶ This sexual desire potential causes a variety of problems, particularly relationship between couples. Thus, this study aims to evaluate the relationship between estradiol levels of premenopausal women with sexual desire.

Method

The cross-sectional study was conducted in Makassar City, South Sulawesi, eastern Indonesia. The population was

perimenopausal women in Bara-baraya (public health center) using purposive sampling technique. Our inclusion age criteria were 42–50 years old, married, husband <60 years, do not suffer any disease, never use hormonal contraception, and has glucose level <200 mg/dl. Estradiol levels evaluated with enzyme-linked immunosorbent assay (ELISA) method using participants' venous blood (3 ml). The sexual desire evaluated through interviews using the Female Sexual Function Index (FSFI) questionnaire.¹⁷ Data presented in frequency (*n*, %), and analysis by Mann–Whitney test. Ethical clearance was approved from ethical committee, Faculty of Medicine, Hasanuddin University, the purpose of this study also explained to participants prior signed informed consent.

Results

Thirty-seven perimenopausal women participated in this study, mainly has parity 1–3 (*n*: 19, 51.35%), housewives (*n*: 32, 86.49%), the participants have been married for 11–15 years and >20 years as many as 9 respondents (24.33%). While the education level, most of respondents had a high school education as many as 23 participants (62.16%) and the husband's participants occupations were entrepreneurs as many as 35 participants (94.6%) (Table 1).

From 37 respondents, the levels of estradiol normal were 22 (59.5%), while there were 15 of abnormal (40.5%). Meanwhile, for sexual desire, there were 20 respondents (54%) that sexually satisfied and 17 participants (46%) were not satisfied (Table 2). Twenty participants had sexual desire and

Table 1 Description of respondent characteristics.

Characteristics	Frequency (<i>n</i>)	Percentage (%)
<i>Parity</i>		
0	10	27.03
1–3	19	51.35
>3	8	21.62
<i>Occupation</i>		
House wives	32	86.49
Civil servant	4	10.81
Entrepreneurs	1	2.70
<i>Marital duration</i>		
<6 years	8	21.62
6–10 years	3	8.1
11–15 years	9	24.33
16–20 years	8	21.62
>20 years	9	24.33
<i>Education levels</i>		
Elementary school	7	18.92
Junior high school	6	16.22
Senior high school	23	62.16
Diploma	1	2.7
<i>Husband's occupation</i>		
Entrepreneurs	35	94.6
Civil servant	1	2.7
Jobless	1	2.7
<i>Total</i>	37	100

Table 2 Distribution of estradiol and sexual desire level.

Research variables	Frequency (n)	Percentage (%)
<i>Estradiol level</i>		
Normal	22	59.5
Abnormal	15	40.5
<i>Sexual desire</i>		
Satisfied	20	54.0
Unsatisfied	17	46.0
<i>Total</i>	37	100

17 unsatisfied participants. The results of the Mann–Whitney *U* statistical test showed that $\rho=0.518$ (Table 3).

Discussion

Some complaints of perimenopause syndrome are caused by a decrease in the hormone estrogen, which plays in sexual desire. The current study found that almost half of our participants reported unsatisfied in FSFI questionnaire. One of potential answer that the estrogenic reduction leading to shrinkage and thinning of the vaginal wall, those make loss of elasticity and lack of vaginal wetting during sexual stimulation in the same time.^{13–18} As a result, many women who complain of pain during intercourse as the side effect of reducing skin elasticity leading to sexual desire disturbance.

As mentioned in the background, the estradiol influences sexual desire. However, in this research, we found no correlation between estradiol levels and sexual desire of perimenopause women. Therefore, we postulate that reduction of sexual desire does not relate with physiological factor but might be caused by psychological factors such as depressive mood so that avoiding intimacy,⁴ and physical factors like bladder problems, vaginal dryness, and vaginal dryness during intercourse.^{3–5} Despite in animal trials, hormonal factors play crucial role in sexual desire.¹⁹ Human's sexual desire influences by complex factors, including in current study. Our finding in line with previous study that reported relationship between sexual desire score and non-hormonal factor such as; age, level of education, age of menopause, marital history, number of pregnancies and children, individual health and pain level.²⁰ Another study also confirmed the relationship between the sexual desire score, occupation of women, and household income level.²⁰ Therefore, our study emphasizes the importance of non-hormonal on sexual desire among perimenopause.

Sexual desire is influenced by sexual function in the body, so that disrupted processes in the body will cause dysfunction. The loss of sexual interest often coincides with the loss of pleasure; the woman will have no desire and do not enjoy making love.¹³ The changes of feel are significant for women, not only as a chronic depressive disease but also as variations in the natural feelings of depression, such as around menstrual time felt by some women.²¹ The previous study also reported that previous traumatic experience²¹ related to sexual desire reduction, but sometimes the main problem remains unclear.²² Chronic stress shows the interference of sexual function. Chronic stress level is related to reduce sexual desire; women with high-stress levels experience more abnormalities in lubrication and sexual pain than that of moderate stress.¹³ This physiological response makes individual stress not concentrate on relationships and sexual pleasure.²³ Thus, regarding hormone levels, stress or psychological conditions play more critical role in female sexual desire, notably in conditions approaching menopause whose hormonal conditions has decreased.

In the previous research, higher average Dehydroepiandrosterone Sulfate (DHEA-S) levels appeared to be protective of sexual dysfunction, which means women with the lowest levels are most likely to experience sexual dysfunction. Previous studies confirmed woman's sexual dysfunction had more than twice the DHEAS levels in the lowest quartile. From this research, it was not found the average and free total testosterone levels, or variability in reproductive hormone measurements, if it is connected with sexual dysfunction.^{23,24} The DHEA-S ratio and activities that triggered anxiety but at the same time it had lower sexual arousal.²⁵ Besides, using a sample of young women with high stress and sexually active averages, it was found that chronic stress daily increases disorders, cortisol and increases sympathetic nervous system activity also DHEA-S.¹³ Therefore, increasing libido is not only due to influence of estradiol, but also can be suppressed by psychological condition of women including stress and anxiety. Some research has shown that psychological condition can affect on woman's sexual condition.

Conclusion

It was found that there is no correlation between estradiol levels and sexual desire in premenopausal women, which indicate that hormonal factors is not solely determine sexual desire.

Table 3 The relation between estradiol and sexual desire.

Research variables	Sexual desire	<i>n</i>	Mann–Whitney <i>U</i>	<i>Z</i> value	<i>Confirms</i>
Estradiol levels	Satisfied	20	149.50	–.647	0.518
	Unsatisfied	17			

Conflict of interest

The authors declare no conflict of interest.

Acknowledgments

We would like to thank to PubNERS for scientific writing and publication assistance.

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