





# **Reproductive duration: effective factors and its relationship with women's health**

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# AGENDA

- ❑ **The importance of the subject**
- ❑ **Reproductive duration definition**
- ❑ **Menarche**
- ❑ **Menarche & Women's Health**
- ❑ **Menopause**
- ❑ **Menopause & Women's Health**
- ❑ **Sexual Hormones**
- ❑ **Duration of Reproductive & Women's Health**



# The importance of the subject

- Women of reproductive age are at a lower risk of several diseases with increasing prevalence and very important, such as cardiovascular diseases, compared to men of the same age.

Sylvia H. Ley, etal. Duration of Reproductive Life Span, Age at Menarche, and Age at Menopause Are Associated With Risk of Cardiovascular Disease in Women. J Am Heart Assoc. 2017 Nov; 6(11): e006713

Farahmand M. etal. Association between duration of endogenous estrogen exposure and cardiovascular outcomes: A population – based cohort study. 2019Life Sciences 221(13)



# Reproductive duration definition

- It is a period in a woman's life during which the woman can become pregnant and give birth. It starts with puberty and first menstruation and ends with last menstruation, which is followed by menopause. This period can be different for every woman.



# Menarche & Women's Health

- *Menarche* is the first menstrual cycle, or first menstrual bleeding, in female humans. From both social and medical perspectives, it is often considered the central event of female puberty, as it signals the possibility of fertility.



# Menarche

## Factors affected

- Genetics
- Geographical location
- Body mass index (BMI)
- Socioeconomic status
- Nutrition

Maryam Farahmand, Fahimeh Ramezani Tehrani, Fereidoun Azizi. Whether age of menarche is influenced by body mass index and lipoproteins profile? a retrospective study. Iran J Reprod Med. 2012 Jul;10(4):337-42



# Menarche

- Due to the rapid closure of epiphyseal plates in bones, early onset of sexual activity and social and psychological problems are also among other important complications of *early puberty*

Asma Tiyuri<sup>1</sup> , Malaknaz Ghannadkafi<sup>1</sup> , Amir Tiyuri , Najmeh Bahramian. Age at Menarche and Its Related Factors Among Students of Qaen, Eastern Iran: A School-Based Cross-Sectional Study. 2019;10(3):e84247.





# Menarche & Diseases

## Age at menarche

- Cardiovascular diseases (Hypertension)
- Metabolic Syndrome
- Breast cancer
- Diabetes
- Psychosocial problems (The use of cigarettes, alcohol, substance abuse, depression, anxiety, bulimia)

Maryam Farahmand, Fahimeh Ramezani Tehrani 1, Marzieh Rostami Dovom, Fereidoun Azizi. Menarcheal Age and Risk of Type 2 Diabetes: A Community-Based Cohort Study. *J Clin Res Pediatr Endocrinol.* 2017 Jun 1;9(2):156-162

Maryam Farahmand 1, Maryam Mousavi 2, Amir Abbas Momenan 3, Fereidoun Azizi 4, Fahimeh Ramezani Tehrani. The association between arterial hypertension and menarcheal age. *Maturitas.* 2023 Aug;174:14-22.

Maryam Farahmand 1, Fahimeh Ramezani Tehrani 1, Samira Behboudi Gandevani 1, Fereidoun Azizi. Is There any Association between Age at Menarche and Risk of Metabolic Syndrome? The Tehran Lipid & Glucose Study. *Arch Iran Med.* 2019 Sep 1;22(9):495-500.



# Menopause

## ● Symptoms

- Irregular periods
- Vaginal dryness
- Hot flashes
- Night sweats
- Sleep problems
- Mood changes
- Weight gain and slowed metabolism
- Thinning hair and dry skin
- Loss of breast fullness



# Menopause

- *Natural Menopause*

VS

- *Surgical Menopause*

- *Age at menopause*

Journal of Endocrinological Investigation

<https://doi.org/10.1007/s40618-021-01616-2>

ORIGINAL ARTICLE

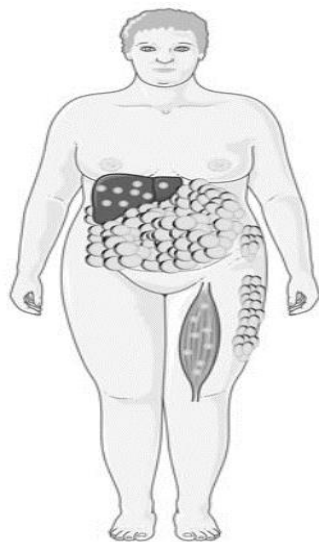


# Aging and changes in adiposity indices: the impact of menopause

M. Farahmand<sup>1</sup> · M. Bahri Khomamid<sup>2</sup> · M. Rahmati<sup>1</sup> · F. Azizi<sup>3</sup> · F. Ramezani Tehrani<sup>1</sup> 

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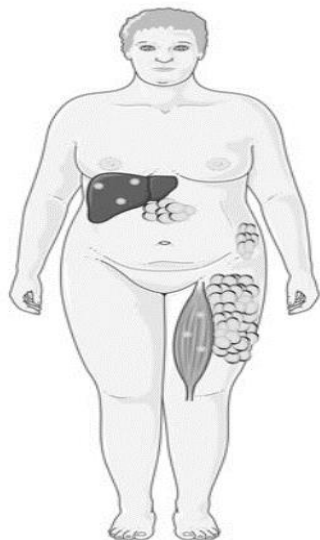
## Metabolically Unhealthy Obesity

### Features:

- ↑ Adiposity
- ↑ Inflammatory status
- ↓ Adipose tissue function
- ↑ Insulin resistance

### Adipose distribution:

- ↓ Subcutaneous fat
- ↑ Visceral fat
- ↓ Lipid storage capacity
  - ↑ Hepatic fat
  - ↑ Skeletal muscle fat




## Metabolically Healthy Obesity

### Features:

- ↑ Adiposity
- ↔ Inflammatory status
- ↔ Adipose tissue function
- ↑ Insulin sensitivity

### Adipose distribution:

- ↑ Subcutaneous fat
- ↓ Visceral fat
- ↔ Lipid storage capacity



# Age at Menopause & its related factors

J Endocrinol Invest  
DOI 10.1007/s40618-015-0346-z



ORIGINAL ARTICLE

# The impact of oral contraceptives on cardiometabolic parameters

M. Farahmand<sup>1</sup> · F. Ramezani Tehrani<sup>1</sup> · M. Rostami Dovom<sup>1</sup> · S. Hashemi<sup>1</sup> · F. Azizi<sup>2</sup>

Received: 14 January 2015 / Accepted: 17 June 2015  
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# Age at Menopause

- High-dose OC-use for  $>$  or  $=$  3 years increased the risk of earlier menopause compared with no OC-use (adjusted hazard ratio 1.12; 95% CI 1.03--1.21).
- The use of lower dose OCs did not increase the risk of earlier menopause.

Maryam Farahmand, Fahimeh Ramezani Tehrani, Leila Pourrajabi, Masood Najafi, Fereidoun Azizi, Factors associated with menopausal age in Iranian women: Tehran Lipid and Glucose Study, J Obstet Gynaecol Res 2013 Apr;39(4):836-41.

Gold, E. B. The timing of the age at which natural menopause occurs. Obstetrics and gynecology clinics of North America 2011; 38:425-440.





Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Maturitas

journal homepage: [www.elsevier.com/locate/maturitas](https://www.elsevier.com/locate/maturitas)



Original Article

## Age at natural menopause in women with a history of chronic diseases—A population-based cohort study

Mina Amiri<sup>a</sup>, Maryam Rahmati<sup>b,\*</sup>, Maryam Farahmand<sup>c</sup>, Fereidoun Azizi<sup>d</sup>,  
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# Age at Menopause

- Non communicable diseases
- Married
- Age at menarche
- Parity

Maryam Farahmand, Fahimeh Ramezani Tehrani, Leila Pourrajabi, Masood Najafi, Fereidoun Azizi, Factors associated with menopausal age in Iranian women: Tehran Lipid and Glucose Study, J Obstet Gynaecol Res 2013 Apr;39(4):836-41.

Gold, E. B. The timing of the age at which natural menopause occurs. Obstetrics and gynecology clinics of North America 2011; 38:425-440.



# Age at Menopause

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- The use of lower dose OCs did not increase the risk of earlier menopause.
- Non communicable diseases
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Maryam Farahmand, Fahimeh Ramezani Tehrani, Leila Pourrajabi, Masood Najafi, Fereidoun Azizi, Factors associated with menopausal age in Iranian women: Tehran Lipid and Glucose Study, J Obstet Gynaecol Res 2013 Apr;39(4):836-41.

Gold, E. B. The timing of the age at which natural menopause occurs. Obstetrics and gynecology clinics of North America 2011; 38:425-440.



# Menopause & Women's Health

- **Early Menopause**
- Cognitive Impairment or Dementia
- Mood (Depression & Anxiety)
- Cardiovascular Diseases
- Bone Loss (Fracture risk)
- Sexual Health
- Early Mortality



# Menopause & Women's Health

- **Late Menopause**

- Breast Cancer
- Ovarian Cancer
- Endometrial Cancer

**VS**

- **Longer life expectancy (such as stronger bones & reducing ischemic heart disease)**



# Sexual Hormones

## Endogenous Estrogen

Maryam Farahmand, Fahimeh Ramezani Tehrani, Davood Khalili, Leila Cheraghi, Fereidoun Azizi. Endogenous estrogen exposure and chronic kidney disease; a 15-year prospective cohort study. *BMC Endocr Disord.* 2021 Aug 4;21(1):155. doi: 10.1186/s12902-021-00817-3.



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## Endogenous Estrogen Exposure and Cardiovascular Mortality Risk in Postmenopausal Women

Miriam J. J. de Kleijn,<sup>1</sup> Yvonne T. van der Schouw,<sup>1</sup> André L. M. Verbeek,<sup>2</sup> Petra H. M. Peeters,<sup>1</sup> Jan-Dirk Banga,<sup>3</sup> and Yolanda van der Graaf<sup>1</sup>



**Age at  
menarche**

**Number of  
Abortion**

**Number of  
Parity**

**Endogenous  
Estrogen**

**Hormonal  
contraceptive**

**Breastfeeding**

**Age at Menopause**





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Life Sciences

journal homepage: [www.elsevier.com/locate/lifescie](http://www.elsevier.com/locate/lifescie)



## Association between duration of endogenous estrogen exposure and cardiovascular outcomes: A population – based cohort study

Maryam Farahmand<sup>a</sup>, Fahimeh Ramezani Tehrani<sup>a,\*</sup>, Davood Khalili<sup>b,c</sup>, Leila Cheraghi<sup>c</sup>, Mahnaz Bahri Khomami<sup>d</sup>, Fereidoun Azizi<sup>e</sup>

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RESEARCH ARTICLE

Open Access

# Endogenous estrogen exposure and chronic kidney disease; a 15-year prospective cohort study



Maryam Farahmand<sup>1</sup>, Fahimeh Ramezani Tehrani<sup>1\*</sup>, Davood Khalili<sup>2,3</sup>, Leila Cheraghi<sup>3</sup> and Fereidoun Azizi<sup>4</sup>



# Endogenous Estrogen

Suppressing the transforming growth factor  $\beta$ -1

Up-regulating nitric oxide synthase activity



Reducing renin and angiotensin-converting enzyme synthesis

Regulating renal sodium & potassium homeostasis

*The Journal of Clinical Endocrinology & Metabolism*, 2022, **107**, e3321–e3329

<https://doi.org/10.1210/clinem/dgac248>

Advance access publication 4 May 2022

**Clinical Research Article**



# The Impact of Endogenous Estrogen Exposure Duration on Fracture Incidence: a Longitudinal Cohort Study

Maryam Farahmand,<sup>1</sup>  Maryam Rahmati,<sup>1</sup> Fereidoun Azizi,<sup>2</sup> Samira Behboudi Gandevari,<sup>3</sup> and Fahimeh Ramezani Tehrani<sup>1</sup>, 

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# Association of reproductive factors with dementia: A systematic review and dose-response meta-analyses of observational studies

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<sup>f</sup>Salim Yusuf Emerging Leaders Program, World Heart Federation, Geneva, Switzerland



# Duration of Reproductive & Women's Health

- Cardiovascular Diseases
- Fracture Incidence
- Chronic Kidney Diseases
- Hypertension Incidence
- Dementia(Alzheimer's Disease & Cognitive Impairment)

Maryam Farahmand <sup>1</sup>, Maryam Rahmati <sup>1</sup>, Fereidoun Azizi <sup>2</sup>, Samira Behboudi Gandevani <sup>3</sup>, Fahimeh Ramezani Tehrani. The Impact of Endogenous Estrogen Exposure Duration on Fracture Incidence: a Longitudinal Cohort Study. *J Clin Endocrinol Metab* . 2022 Jul 14;107(8):e3321-e3329.

Chunying Fu,a,b,1 Wenting Hao,a,b,1 Nipun Shrestha,c Salim S. Virani,d Shiva Raj Mishra,e,f and Dongshan Zhu. Association of reproductive factors with dementia: A systematic review and dose-response meta-analyses of observational studies. *thelancet.com* Vol 43 Month January, 2022.



## Take-Home Message

- Women of reproductive age are at a lower risk of several diseases
- Appropriate policy-making as a prerequisite to establishing healthy living patterns among Iranian women
- Understanding barriers by providing evidence
- Helping design effective preventive strategies
- Implement appropriate interventions



*Say, 'My Lord!*

*Increase me*

*in knowledge.'*

سوره مبارکه طه آیه شریفه ۱۱۴





A scenic landscape featuring a calm pond in the foreground, a small rustic house with a red roof in the middle ground, and a large, densely forested hillside in the background. A flock of sheep is grazing on the grassy bank of the pond, and a single cow is visible in the distance. The overall scene is peaceful and rural.

*Thank  
you*