

Correlation of Age at Menarche and Nutritional Status with Age at Menopause: Implications for Women's Reproductive Health

Nurhidaya^{1*}, Dwi Ghita²

^{1,2}Bachelor of Midwifery Program, Faculty of Health, St. Fatimah Institute of Health and Business, Mamuju, West of Sulawesi, Indonesia

*Correspondence: Nurhidaya, Email: nurhidayadonris@yahoo.com

Received: July 1, 2025 ○ Revised: July 31, 2025 ○ Accepted: August 1, 2025

ABSTRACT

Background: Menopause is a period when menstruation naturally stops or a time when a woman experiences her last menstrual bleeding and never menstruates again.

Objective: To determine the factors related to the age of menopause, identification was carried out by grouping menopausal women based on the age of *menarche* and nutritional status.

Methods: The research method is analytical with a *cross-sectional study approach* using primary data from 90 menopausal women. Data were analyzed using *qualitative descriptive* research. The sampling technique used in this study was *purposive sampling*.

Results: The results of the study showed that in the *menarche* age indicator, the calculated Chi Square was greater than the Chi Square table ($17.83 > 3.841$) so H_a was accepted and H_o was rejected so that there was a relationship between the age of *menarche* and the age of menopause. In the nutritional status indicator, the calculated Chi Square was greater than the Chi Square table ($17.2 > 3.841$), so H_a was accepted and H_o was rejected so that there was a relationship between nutritional status and the age of menopause.

Conclusion: In conclusion, namely There is a relationship between the age of *menarche* and the age of menopause and there is a relationship between nutritional status and the age of menopause, so there needs to be information or counseling for the community about factors related to the age of menopause and especially factors that can accelerate menopause.

Keywords: Age, Menopause, Menarche, Nutritional Status, Women's Reproductive Health

INTRODUCTION

According to data from the *World Health Organization (WHO)*, in developing countries, the number of women over 50 is expected to reach approximately 1.2 billion by 2030. These women will experience menopause approximately 3 to 5 years after their first menstrual period, and a diagnosis of menopause can be made if a woman has not had a period for 12 months. (Walyani, ES 2014).

In the UK, the average age of menstruation stops at 51. Life expectancy for women in the UK is significantly higher than it was for previous generations, despite improvements in health services and care over the years. (Andrews, Gilly. 2014).

In Indonesia, it is estimated that around 60 million women will experience menopause by 2025. This represents nearly 7.4% of the population, or 14 million women, who experienced menopause in 2016. In Indonesia, women experience menopause at an average age of 48. Meanwhile, women's life expectancy has increased. Life expectancy in 1930 was 40 years, rising to 67 years in 1998, potentially leading to an increase in the number of menopausal women (Hekhmawati, 2016).

In 2020, the population of West Sulawesi Province was 1,419,229, with 699,042 females. The female population was 46,321 in the 40-44 age group, 40,311 in the 45-49 age group, and 33,371 in the 50-54 age group. Life expectancy for men is lower than for women, so the high number of women aged 40-54 also increases the potential number of menopausal women. (Central Statistics Agency of West Sulawesi Province, 2022).

Women who continue to give birth after the age of 40 are more likely to experience menopause later. This is because pregnancy and childbirth can slow down the reproductive organs and slow down the body's aging process. Women with unhealthy lifestyle habits, such as smoking, are more likely to experience menopause earlier (around 1.5 years). Some researchers also believe that certain components in cigarettes can kill some egg cells. Most studies have shown that women who smoke are more likely to experience menopause at a relatively young age, between 43 and 50. Upon menopause, egg production in a woman's ovaries stops, making pregnancy impossible. This was revealed in research conducted by Beth Israel Deaconess Medical Center in Boston (Mulyani, NS 2013).

Based on the data above, the author is motivated to conduct research with the title "Factors Related to Menopause Age in the Working Area of the Binanga Community Health Center, Mamuju Regency".

METHODS

The type of research used in this study is an analytical survey with a *cross-sectional study approach*, namely data on independent and dependent variables are collected together to determine the factors related to the age of menopause in the working area of the Binanga Community Health Center, Mamuju Regency.

The time of implementation of this research is from January to June 2025. The population in this study were all women aged 35 to 55 years who were registered and were in the Working Area of the

Binanga Health Center, Mamuju Regency, totaling 893 people. The number of samples used in this study was 90 people. The analysis technique used in this study was Univariate analysis, an analysis used to determine the frequency distribution and percentage in research and bivariate analysis is a data analysis used to test hypotheses and answer the objectives of the study.

RESULT

Table 1. Sample Distribution by Age of Respondents in the Working Area of the Binanga Community Health Center, Mamuju Regency in 2025

Age	Menopause	
	Frequency	Percentage (%)
35-40 Years	28	31%
40-52 Years	53	59%
52-55 Years	7	8%
>55 Years	2	2%
Amount	90	100%

The data in Table 1 shows that there were 28 menopausal women aged 35-40 (31%), 53 women aged 40-52 (59%), and 7 women aged 52-55 (8%). Meanwhile, there were only 2 women (2%) aged >55.

Table 2. Sample Distribution According to Respondents' Occupation in the Binanga Community Health Center Work Area, Mamuju Regency, 2025

Work	Menopause	
	Frequency	Percentage (%)
housewife	40	44%
Employee	19	21%
Self-employed	31	34%
Amount	90	100%

The data in table 2 shows that there are 40 menopausal women (44%) who work as housewives, 19 people (21%) who are employees and 31 people (34%) who are self-employed.

Table 3. Distribution of menopause age in the Binanga Community Health Center Work Area, Mamuju Regency in 2025

Menopause Age	Menopause	
	Frequency	Percentage (%)
< 40 Years	28	31
40 – 52 Years	53	59
> 52 Years	9	10
Amount	90	100

Based on data from Table 3, it shows that menopause occurs more frequently in the 40-52 year age group with a frequency of 53 people (59%). Meanwhile, in the <40 year age group there are 28 people (31%) and in the >52 year age group there are 9 people (10%).

Table 4. Distribution of Menopause Age Based on Menarche Age in the Working Area of Binanga Community Health Center, Mamuju Regency in 2025

Age of Menarche	Menopause	
	Frequency	Percentage (%)
< 12 years	34	38
12-16 Years	44	49
>16 Years	12	13
Amount	90	100

Data from table 4 shows that menopause occurs more frequently at the age of menarche of 12-16 years with a frequency of 44 people (49%) compared to the age of menarche <12 years with a frequency of 34 people (38%) and the age of menarche >16 years with a frequency of 12 people (13%).

Table 5. Relationship between Age of Menarche and Age of Menopause in the Working Area of the Binanga Community Health Center, Mamuju Regency in 2025

Age of Menarche	f_o	f_h	$f_o - f_h$	$f_o - f_h^2$	$\frac{f_o - f_h^2}{f_h}$
< 12 years	34	30	4	16	0.53
12-16 Years	44	30	14	196	6.5
>16 Years	12	30	-18	324	10.8
Amount	90	50	0	536	17.83

The data in table 5 above shows that from the 90 samples studied, it can be seen that the age of menarche indicator, the Chi Square result (χ^2) is 17.83. Based on $df = 1$ and the Chi Square Table value = 3.841. While the error rate is 5% (0.05). It turns out that the calculated Chi Square is greater than the Chi Square table ($17.83 > 3.841$), so H_a is accepted and H_o is rejected. This shows that there is a relationship between the age of menarche and the age of menopause.

Table 6. The Relationship between Nutritional Status and Menopausal Age in the Working Area of the Binanga Community Health Center, Mamuju Regency in 2025

Nutritional status	f_o	f_h	$f_o - f_h$	$f_o - f_h^2$	$\frac{f_o - f_h^2}{f_h}$
Normal (BMI 18.5 – 29.5)	48	30	18	324	10.8
Abnormal (< 18.5)	25	30	-5	25	0.8
Abnormal (> 30)	17	30	-13	169	5.6
Total	90	90	0	518	17.2

The data in table 6 above shows that from the 90 samples studied, it can be seen that in the nutritional status indicator, the Chi Square result (χ^2) is 17.2. Based on $df = 1$ and the Chi Square table value = 3.841. While the error rate is 5%. It turns out that the calculated Chi Square is greater than the Chi Square table ($17.2 > 3.841$). Based on the provision that if (χ^2) calculated is greater than (χ^2) table, then H_a is accepted and H_o is rejected. So there is a relationship between nutritional status and the age of menopause.

DISCUSSION

This research was conducted at the Binanga Community Health Center, Mamuju District, Mamuju Regency in 2025. The sample used was 90 menopausal women.

Based on age, menopausal women are more likely to experience it at the age of 40-52 years with a frequency of 53 people (59%), then at the age of 35-40 years with a frequency of 28 people (31%), then at the age of 52-55 years with a frequency of 7 people (8%), and it occurs less frequently at the age of >55 years with a frequency of 2 people (2%).

Based on occupation, menopause occurs more frequently in women who work as housewives with a frequency of 40 people (44%), then as self-employed with a frequency of 31 people (34%), and occurs least frequently in women who work as employees with a frequency of 19 people (21%).

Menarche is a girl's first menstrual period upon entering puberty. The age at which girls first menstruate varies greatly. Currently, girls tend to menstruate at a relatively young age or older.

The results of the study using univariate analysis showed that menopause occurs more frequently at the age of *menarche*, between 12 and 16 years, with a frequency of 44 people (49%), compared to *menarche* at ages <12 years (38%) and >16 years (13%). In this case, women experience *menarche* at varying ages. This is in accordance with the theory that *menarche* usually occurs at age 12, some even at age 16 or when entering mid-puberty in adolescence before reproductive age. Some even start menstruating at a younger or older age (Sukarni, Icemi. 2013).

Based on the results of the study using bivariate analysis, it was shown that from the 90 samples studied, it was seen that the indicators age of *menarche*, the Chi Square result (χ^2) is 17.83. Based on $df = 1$ and Chi Square table = 3.841. While the error rate is 5% (0.05). It turns out that the calculated Chi Square is greater than the Chi Square table ($17.83 > 3.841$). Based on the provision that if (χ^2) calculated is greater than (χ^2) table, then H_a is accepted and H_o is rejected. So there is a relationship between the age of *menarche* and the age of menopause. The sooner or younger a woman gets her first period, the longer or older she will be when entering or experiencing menopause. Women who experience their first period at the age of 16 or 17 years are likely to experience menopause sooner or earlier. For women who menstruate sooner/earlier, the possibility of menopause is late or at the age of 50 years. (Mulyani, NS2013) The earlier/faster a woman gets her first period, the later she will enter menopause. The later a woman gets her first period, the sooner menopause will occur.

Research conducted by Auliyah Ratna shows that the age of *menarche* influences the age of menopause. The sooner a woman gets her period, the later she will enter menopause. If *menarche* is <19 years old, you will experience menopause at the age of 55 years. If *menarche* is 19 years old, then menopause is at 45 years old. If *menarche* is 13 years old, then menopause is 55 years old. (Ratna, Auliah. 2014). Another research conducted by Asih Setiasih

regarding the age of menopause is influenced by the age of *menarche* (Setiasih, Asih. 2013). This is in accordance with Kasdu's theory that there is a relationship between the age of first menstruation and the age of menopause. The sooner/younger someone experiences *menarche*, the older/older they will be at the time of menopause (Anggraini, MT 2014).

In contrast to Speroff and Reitz, women who start their periods later, at 16 or 17, will experience menopause earlier, and women who start their periods earlier are more likely to experience menopause at age 50 (Senolinggi, MA 2015)

Nutritional status is the result of a balance between nutrient intake and body needs. Each individual's nutritional needs must be consistently met to maintain mental and physical health. Furthermore, it ensures the reproductive system and metabolism function properly, both functionally and through processes.

The results of the study using univariate analysis showed that menopause occurred more frequently in those with normal nutritional status (BMI 18.5 – 29.5) with a frequency of 48 people (53%), compared to those with abnormal nutritional status (BMI <18.5) with a frequency of 25 people (28%) and BMI >30 with a frequency of 17 people (19%). In this case, women with normal BMI experienced menopause more often. This is the same as the theory that early menopause is usually caused by many factors, for example consuming random food and drinks (Mulyani. NS 2013).

From the results of the study with bivariate analysis, from 90 research samples it can be seen that in the nutritional status indicator, the Chi Square result (χ^2) is 17.2. Based on $df = 1$ and Chi Square table = 3.841. While the error rate is 5% (0.05). It turns out that the calculated Chi Square is greater than the Chi Square table ($17.2 > 3.841$). Based on the provision that if (χ^2) calculated is greater than (χ^2) table, so H_a is accepted and H_o is rejected. So there is a relationship between nutritional status and the age of menopause. The cause of early menopause in women is consuming careless food and drinks. So it is necessary to apply a clean and healthy lifestyle. Also pay attention to eating patterns and the types of food and drinks consumed (Mulyani, NS 2013).

Yenthi Widjayanti's research found that 50% of menopausal women had normal nutritional status, while 31% were overweight and 19% were obese. Therefore, she concluded that nutritional status is closely related to menopause. Women are encouraged to maintain a healthy weight and a healthy nutritional status to reduce menopausal symptoms caused by declining estrogen levels (Widjayanti, Y. 2018).

Another study conducted by Nanda Eksi Alvionita found that menopause occurs between the ages of 45 and 50, but it tends to occur either later or earlier. One factor is nutritional status. Her research found that 60% of women experiencing normal menopause were overweight. This means that the age of menopause is related to nutritional status (Alvionita, NE 2015).

CONCLUSION

Based on the results of research and discussion on Factors Related to Menopause Age in the Working Area of the Binanga Community Health Center, Mamuju Regency, there are 2 conclusions, namely:

There is a high correlation between the age of *menarche* and the age of menopause in the Binanga Community Health Center Working Area, Mamuju Regency .

There is a high correlation between nutritional status and age of menopause in the Binanga Community Health Center Working Area, Mamuju Regency.

REFERENCES

- Alvionita, NE 2015. *The Relationship between Nutritional Status and Menopause in Damarsi Buduran Village, Sidoarjo* .
<http://repositori.unusa.ac.id>
- Andrews, Gilly. 2014. *Textbook of Women's Reproductive Health*. Jakarta: EGC Medical Book Publisher
- Anggraini, MT 2014. *The Relationship Between Age of Menarche and Age of Menopause in Women*.
<http://jurnal.unimu.a/php/index/psn1201>
- Central Statistics Agency of West Sulawesi Province 2022. <https://sulbar.bps.go.id/id/statistics-table/2/NTE1IzI=/-census-penduduk-2020--jumlah-penduduk-menurut-grup-umur-dan-jenis-kelamin.html>
- Dewi, Melati. 2013. *Textbook of Reproductive Health and Family Planning for Midwifery Students*. Jakarta: Trans Info Media
- Fitri, Imelda, 2017. *A Closer Look at the Female Reproductive System*. Yogyakarta: Gosyen Publishing
- Hekhmawati, 2016. *Number of Menopausal Women in Indonesia* . <http://prints.ums.ac.id/46220/13.pdf> Accessed April 14, 2018
- Janiwarty, B. 2013. *Psychological Education for Midwives*. Yogyakarta: Andi Offset (333-340)
- Lubis, NM 2013. *Psychology of Women's Reproductive Health & Reproductive Development*. Jakarta: Kencana Prenada Media Group
- Marianti. 2016. *Menopause*.
<http://www.alodokter.com/menopause> .
Accessed April 29, 2018
- Marmi, 2013. *Nutrition in Reproductive Health* . Yogyakarta: Pustaka Pelajar
- Marmi, 2014. *Reproductive Health* . Yogyakarta: Student Library
- Mulyani, NS 2013. *Menopause*. Yogyakarta: Nuha Medika
- Nugroho, T. 2014. *Women's Reproductive Health Problems*. Yogyakarta: Nuha Medika
- Ratna, Auliah. 2014. *The Relationship between Menarche and Menopause in Lalabata District, Soppeng Regency* <http://ejournal.unstrat.ac.id>
- Ratnawati, Ana. 2014. *Maternity Nursing Care* . Yogyakarta: Pustaka Baru Press
- Senolinggi, MA 2014. *The Relationship between Age of Menarche and Age of Menopause*.
<http://journal.ustrat.ac.id>
- Loyalty, Love. 2013. *Factors associated with Menopause Age*. <http://prints.undip.ac>.
- Sukarni, I. 2013. *Maternity Nursing Textbook*. Yogyakarta: Nuha Medika
- Sugiyono. 2012. *Statistics for Research*. Bandung: Alfabeta
- Sugiyono. 2013. *Combination Research Methods*. Bandung: Alfabeta
- Sugiyono. 2014. *Qualitative and Quantitative Research Methods*. Bandung: Alfabeta
- Wahyu, P. 2013. *Maternity Nursing Textbook*. Yogyakarta: Nuha Medika
- Walyani, ES 2014. *Reproductive Health and Family Planning Material Guide*. Yogyakarta: Pustaka Baru Press
- Widjayanti, Yhenti. 2018. *Nutritional Status, Physical Activity, and Menopausal Complaints* .
<http://jurnal.um.id>