

# The Influence of Environment, Lifestyle, Stress, and Activity on Mothers' Readiness to Face Menopause at the Kalumpang Community Health Center

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## ABSTRACT

Menopause in women is the cessation of menstruation, which is a very complex period because it is related to physical and psychological conditions. The purpose of this study was to determine the direct and indirect influence of social environment, lifestyle, stress, and physical activity on maternal readiness to face menopause at the Kalumpang Ternate Community Health Center, North Maluku in 2017. This research method is a quantitative approach with a cross-sectional design. The research sample was 50 respondents. The analysis method used was the Structural Equation Model (SEM) with SmartPLS 2.0 and SPSS 20. The results of the hypothesis testing were that the variable of premenopausal maternal readiness in the Kalumpang Ternate Community Health Center Working Area, North Maluku was influenced by the environment (17.06%), lifestyle (23.39%), stress (19.21%) and physical activity (31.89%). The direct influence of premenopausal maternal readiness was 80.2% and the indirect influence was 5.72%. Physical activity is a dominant factor that greatly influences the readiness of premenopausal mothers, where the higher the physical activity of premenopausal mothers, the better the mother's readiness to face menopause, and conversely, the lower the physical activity, the worse the mother's readiness to face menopause. Research suggestions are expected for the community, especially families, to provide more support and attention to premenopausal mothers so that in facing menopause later there will be no anxiety that can disrupt the lives of mothers and families.

**Keywords:** Environment, Lifestyle, Stress, Physical Activity, Readiness.

## I. Introduction

Menopausal syndrome affects many women worldwide: approximately 70–80% in Europe, 60% in the United States, 57% in Malaysia, 18% in China and Japan, and 10% in Indonesia. These data show striking differences, one of the contributing factors being differences in dietary patterns across countries. Premenopausal women are influenced by various factors, including education, socioeconomic status, and occupation. Women with the greatest anxiety are those with higher education and those in the middle to upper classes. Menopausal syndrome affects many women worldwide, with prevalence varying across regions (Proverawati & Sulistyawati, 2010; Sarwono, 2007). There are 16.5 million elderly people spread across the globe, with 7.8 million (47.3%) men and 8.7 million (52.7%) women. The 2015 population census

showed that Indonesia is currently among the top five countries with the largest elderly population in the world, reaching 18.1 million (7.6%). The number of menopausal individuals aged 60 years or older is expected to continue to increase, reaching 36 million by 2025 (Bappenas, 2015). Menopause begins at varying ages, typically around 50 years, although some women may experience menopause earlier. Menopause is defined as the permanent cessation of menstruation or the last menstrual period. Postmenopause is the period following menopause, lasting for at least 12 months and often associated with senile menopause, which generally occurs in the fifth decade of life (Proverawati & Sulistyawati, 2010; Mulyani, 2013). As a result of menopausal changes, women may become less confident, feel neglected and unappreciated, experience stress, and develop persistent anxiety related to physical changes. Older women are also more susceptible to degenerative diseases such as osteoporosis, coronary heart disease, cancer, and hypertension (Hawari, 2006; Hariyanto, 2016).

If this condition cannot be managed properly, it may develop into chronic stress, which negatively affects social life. Stress can stimulate the brain, disrupt hormonal balance, and ultimately impair overall health status (Hawari, 2006; Herawati, 2012). Working women are generally better prepared for premenopause compared to unemployed women, possibly because they are accustomed to dealing with stress in their work environment. For these women, premenopause is perceived as a form of stress similar to occupational stress. Surveys indicate that many premenopausal women experience symptoms such as sleep disturbances, unexplained anxiety, irritability, and difficulty controlling emotions. Common psychosocial effects of premenopause include anxiety, fear, irritability, memory loss, difficulty concentrating, nervousness, feelings of worthlessness, stress, and depression (Adriyani, 2012; Stuart & Syndeen, 2011). Women who are well prepared for menopause tend to become healthier, more independent, and empowered individuals (Hariyanto, 2016). Women experience a transitional phase known as premenopause before entering menopause. During menopause, the ovaries contain only 40–50 primordial follicles, leading to a decline and eventual cessation of estrogen production. Menopause marks the final menstrual period, accompanied by reduced levels of estrogen and progesterone. This is a natural and inevitable process experienced by all women and requires adequate preparation to face potential health risks (Aristianti, 2014; Bohme, 2009).

Research conducted by the Department of Obstetrics and Gynecology in Sumatra reported that health complaints among menopausal women are associated with decreased estrogen and androgen levels in circulation. These complaints include dyspareunia, post-coital bleeding, vaginal dryness, vaginal discharge, vaginal itching, burning sensations, dysuria, and urinary incontinence (Aina, 2009). Physiologically, aging causes changes in body composition. Common changes in older adults include decreased muscle mass, psychomotor skills, accuracy, and speed. Body fat tends to increase due to reduced physical activity, while basal metabolic rate declines as a result of muscle loss and aging. Reduced activity levels lead to lower energy requirements in older adults. Dietary patterns significantly influence nutritional intake and physical condition in elderly populations (Aina, 2009; Neuman & Yoshida, 2007; Fatimah, 2010). Based on preliminary findings among 15 premenopausal women aged 40–51 years who visited the Kalumpang Community Health Center, nine reported experiencing symptoms in recent years. These symptoms included hot flashes, difficulty initiating sleep, fatigue, irregular menstruation, night sweats, and increased stress in response to previously non-disturbing situations. Women's responses to menopause vary; some perceive it as a natural process and feel no need for preparation, while others consider it a significant problem. The main stressors reported were economic difficulties, limited access to health services, family problems, and misinformation regarding menopause (Booth, 2011). This study aims to determine the direct and indirect effects of social environment, lifestyle, stress, and physical activity on the readiness of premenopausal women to face menopause in the working area of the Kalumpang Ternate Community Health Center, North Maluku, in 2017.

## II. Research Method

The research conducted was quantitative research with a cross-sectional design. The population of this study consisted of 50 premenopausal women at the Kalumpang Ternate Community Health Center, North Maluku. The sampling technique used was representative sampling. Samples were selected based on inclusion criteria, namely premenopausal women who were willing to be interviewed and to complete the questionnaire. The number of samples was determined based on the number of indicators used in the study, where the total number of indicators was multiplied by 5 to 10. Since this study used nine indicators, the required sample size ranged from 45 to 90 respondents. In addition, another commonly used guideline for determining sample size suggests a range of 50–100 respondents.

The study was conducted over a one-month period, in January 2017, at the Kalumpang Community Health Center in Ternate, North Maluku. Data were collected using a structured questionnaire. The data obtained from the questionnaires were summarized using Microsoft Excel in CSV format and subsequently processed using the SmartPLS software (Sarmanu, 2012; Yamin & Kurniawan, 2009). The data analysis procedures included univariate analysis, the chi-square test, and Structural Equation Modeling (SEM) using SmartPLS 2.0 (Yamin & Kurniawan, 2009). Univariate analysis was conducted to describe the distribution of respondents and the variation of the variables studied by generating frequency distribution tables and calculating percentages. SEM analysis using the Partial Least Squares (PLS) approach involved several stages, including the development of the structural model, the measurement model design, path diagram conversion into a system of equations, estimation of the inner and outer models, evaluation of goodness of fit, and hypothesis testing using the bootstrapping technique with t-statistics as the basis for significance testing.

### III. Result and Discussion

#### 3.1. Research Result

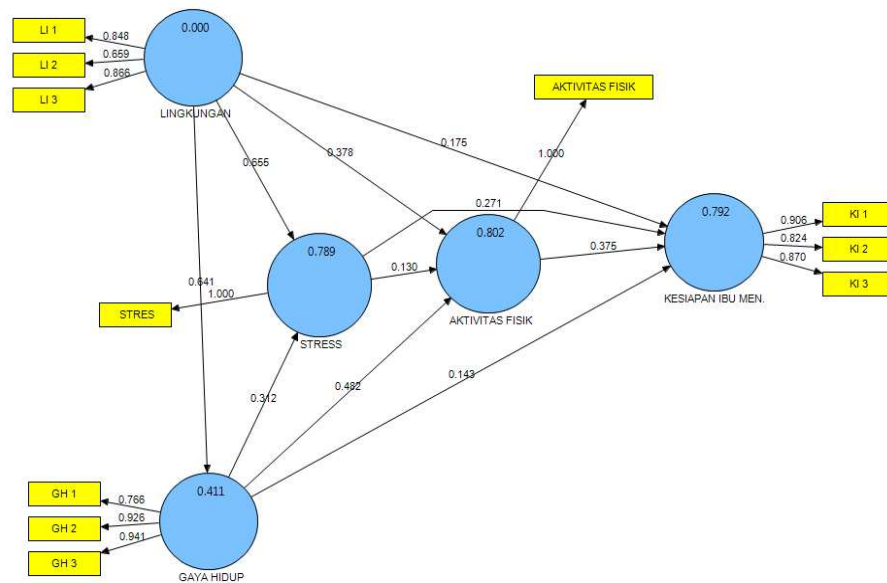
From the research that has been conducted, the following results were obtained:

**Table 1. Overview of Respondent Characteristics**

Characteristics		Amount	%
Age	40 - 50 Years	17	34%
	51 - 60 Years	38	76%
	>61 Years	5	10%
Education	High School	32	64%
	Academy	10	20%
	Bachelor	8	16%
Work	Work	8	16%
	Doesn't work	42	84%

Source: Data processed by SPSS in 2017

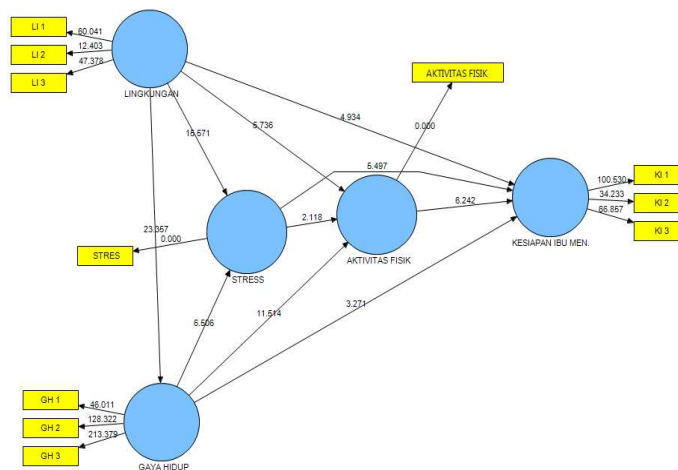
Based on table 1, the majority of respondents aged 51-60 years were 38 respondents (76%), while respondents aged 40-50 years were 17 respondents (34%) and those aged over 61 years were 5 respondents (10%). In addition, the majority of respondents had high school education, 32 respondents (64%), while there were 10 respondents (20%) with an academic education and 8 respondents (16%) with a bachelor's degree. In the employment variable, the majority of respondents were unemployed, 42 respondents (84%), while there were 8 respondents (16%) who were employed. Furthermore, from the results of the bivariate analysis to see the total variation of respondents' answers per variable to the characteristics of the study, the chi square test was used and the results obtained were that there was no relationship between the mother's readiness variable and the characteristics of the respondents in the study, where the p-value > 0.05. Further analysis using the Structural Equation Modeling (SEM) analysis approach, and it was found that The loading factor value has met the requirements, namely a loading factor value above 0.5. A reflective indicator is declared valid if it has a loading factor above 0.5 for the intended construct based on its substantive content by looking at the significance of the weight (t = 1.96).



**Figure 1. PLS Output (Loading Factors)**

Based on the smartPLS output in Figure 1, it can be seen that each indicator or dimension forming the latent variable shows good results, namely with a high loading factor value, with each indicator greater than 0.5. With these results, it can be said that the indicators forming the latent variable constructs of physical activity, stress, environment, stress, and premenopausal maternal readiness have shown good results.

The results of the significant evaluation of the Inner Model are set in the SmartPLS 2.0 output in Figure 2. which states that after bootstrapping is carried out to measure the T statistic value of each latent construct against its construct, the T statistic value is compared with the value of  $\alpha = 0.05$  (1.96). The provision is, if the T statistic value is greater than the value of  $\alpha = 0.05$  (1.96), then the latent construct is significant to its construct.13,14 The inner model is also called the R Square value, the T statistic hypothesis test, the influence of direct and predictive variables (Q Square value).



**Figure 2. Inner Model (T-Statistics) Bootstrapping**

From the analysis results using R Square, the R square value for the premenopausal mother's readiness variable was 79.2%, with the remaining 20.8% influenced by other factors. The R square value for the physical activity variable was 80.2%, with the remaining 19.8% influenced by other factors. The R square value for the lifestyle variable was 41.1%, with the remaining 58.9% influenced by other factors. The R square value for the stress variable was 79.2%, with the remaining 20.8% influenced by other factors. by 78.9% and the remaining 21.1% was influenced by other factors. In addition, from the results of the T statistic analysis, the T statistic

value reflected on the variables was mostly > 1.96, thus indicating that the indicator block had a positive and significant influence in reflecting the variables.

The results of the hypothesis test showed that the environment has a positive effect on the readiness of premenopausal mothers. The test results on the parameter coefficient between the environment and the readiness of premenopausal mothers showed a positive effect of 4.933854. The T-statistic value is far above the critical value (1.96). Likewise, the variables of lifestyle, stress, and physical activity on the readiness of premenopausal mothers have a positive effect, far above the critical value (1.96). Furthermore, based on the pattern of relationships between variables described in the conceptual framework, there are direct and indirect relationships. The following table shows direct and indirect relationships.

**Table 2. Percentage of Influence Between Variables on the Premenopausal Mother's Readiness Variable**

Source	LV Correlation	Direct Rho	Indirect Rho	Total	Direct %	Indirect %	%Total
Environment	0.79807	0.174949	3.6200	3.7950	13.96%	1.036%	15.00%
Lifestyle	0.761269	0.142991	1,8007	1.9437	10.89%	0.653%	11.539%
Stres	0.827985	0.271427	0.6858	0.9572	22.47%	0.0012%	22.475%
Physical Activity	0.850604	0.374908	-	0.3749	31.89%	0.000%	31.890%
<b>Total</b>					79.2%	1.69%	80.9%

Table 2 shows that the environment has both direct and indirect influences on premenopausal maternal readiness. The results of the parameter coefficient test between the environment and premenopausal maternal readiness show a direct influence of 13.9%, while the indirect influence between the environment and premenopausal maternal readiness is 1.036%. ifestyle has both direct and indirect effects on premenopausal maternal readiness. The coefficient test for the parameter between lifestyle and premenopausal maternal readiness shows a direct effect of 10.89%, while the indirect effect between lifestyle and premenopausal maternal readiness is 0.653%.

The results of the parameter coefficient test between stress and the readiness of premenopausal mothers show that there is a direct influence on the readiness of premenopausal mothers of 22.47%, while the indirect influence between stress and the readiness of premenopausal mothers is 0.0012%. The results of the parameter coefficient test between physical activity and the readiness of premenopausal mothers show that there is a direct influence on the readiness of premenopausal mothers of 31.89%, while the indirect influence between physical activity and the readiness of premenopausal mothers is 0.00%. So that from each direct influence of the exogenous latent variables when together show conformity with R square or in other words this states that the environmental variables, lifestyle, stress, and physical activity on the readiness of premenopausal mothers are (13.96% + 10.89% + 22.47% + 31.89%) = 79.2%

From the research results, the Q Square value was obtained where the Q Square value functions to assess the magnitude of diversity or variation in research data regarding the phenomenon being studied and the results are as follows:

$$\begin{aligned}
 Q^2 &= 1 - (1-R12) (1-R22) (1-R32) (1-R42) \\
 &= 1 - (1-0.411) (1-0.789) (1-0.802) (1-0.792) \\
 &= 0.958 \text{ or } 95.8\%
 \end{aligned}$$

$$\text{Model Error} = 100\% - 95.8\% = 4.2\%$$

This shows that the analysis model can explain 95.8% of the data diversity and is able to examine the phenomena used in the research, while 4.2% is explained by other components that are not in this research.

### 3.2. Discussion

#### a. The Direct Influence of Social Environment on Premenopausal Mothers' Readiness

The results indicate that social environment variables were not influenced by respondent characteristics, including age, education, and occupation. This was evidenced by the chi-square test results at a 5% significance level, which showed p-values (Asymp. Sig.) greater than 0.05, indicating that the social environment was independent of respondents' characteristics. Respondents demonstrated positive responses toward the social environment variable, as reflected by significant cross-loading values among the indicators. Furthermore, the direct effect of the social environment on premenopausal mothers' readiness to face menopause was statistically significant. Using a 95% confidence level (critical value = 1.96), the obtained t-statistic of 3.214 exceeded the threshold, indicating a strong direct influence with a rho value of 13.96%. Statistically, this confirms a significant direct relationship between the social environment and readiness to face menopause.

These findings are supported by theoretical perspectives stating that environmental factors—particularly education—play a major role in determining community health status, especially among premenopausal women (Bohme, 2009). Similar findings were reported in a study conducted in Purwojati Village, Kertek District, Wonosobo Regency, which demonstrated a significant relationship between social environment and readiness to face menopause ( $p = 0.002$ ) (Contesha & Idrus, 2010). Menopausal disturbances are experienced differently by each woman, largely due to variations in psychological conditions. For working women, menopause may be more stressful due to dual roles as caregivers and income earners. Work-related stressors—such as job demands, responsibilities, physical work environment, interpersonal relationships, limited career advancement, and job insecurity—can exacerbate stress during the menopausal transition (Ghani, 2009; Mulyani, 2013; Hurlock, 2007). Individuals from lower-middle socioeconomic backgrounds, characterized by unstable employment and low income, are more vulnerable to stress. Economic conditions are a crucial component of the social environment that may contribute to unpreparedness for menopause, as individuals with lower income levels tend to experience higher anxiety (Isnaeni, 2010; Stuart & Syndeem, 2011).

#### b. The Direct Influence of Lifestyle on Premenopausal Mothers' Readiness

The findings reveal that lifestyle variables were not influenced by respondents' characteristics, including age, education, and occupation. This was supported by chi-square test results showing p-values (Asymp. Sig.) greater than 0.05. Respondents generally demonstrated healthy lifestyle behaviors, as indicated by significant cross-loading values among lifestyle indicators. The direct influence of lifestyle on readiness to face menopause was statistically significant, with a t-statistic value of 6.715, exceeding the critical value of 1.96 at a 95% confidence level. The rho value of 10.89% indicates a moderately strong direct effect, confirming that lifestyle significantly influences readiness to face menopause. These findings are consistent with previous studies reporting a positive relationship between lifestyle and readiness to face menopause among premenopausal women attending integrated health posts (posyandu) ( $p = 0.015$ ) (Stuart & Syndeem, 2011). Other studies also indicate that factors such as knowledge, attitudes, family support, economic conditions, and lifestyle significantly influence anxiety levels in perimenopausal women, while sociodemographic factors—such as age, education, and occupation—do not show significant effects (Booth, 2011; Stuart & Syndeem, 2011).

Theoretically, general health status is a significant predisposing factor for anxiety. Lifestyle choices influence long-term health outcomes, with effects often emerging years or decades later. Aging is associated with a decline in fat-free mass (approximately 6.3% per decade), increased fat mass (2% per decade), and reduced body water content (2.5% per decade). Additionally, changes in consumption patterns, physical activity, rest, and stress levels occur as individuals enter older age (Isnaeni, 2010; Chomaria, 2009). Maintaining a balanced diet, engaging in age-appropriate physical activity, sustaining social interactions, cultivating positive thinking, avoiding excessive stress, and practicing spiritual activities are essential for promoting physical and mental well-being. Discussing problems openly reflects a positive attitude and contributes to improved readiness for menopause (Isnaeni, 2010).

c. The Direct Influence of Stress on Premenopausal Mothers' Readiness

The results demonstrate that stress levels were not influenced by respondents' age, education, or occupation, as indicated by chi-square test results with p-values exceeding 0.05. However, stress significantly influenced readiness to face menopause. The parameter coefficient test revealed a positive direct effect, with a t-statistic value of 6.396, exceeding the critical value of 1.96 at a 5% significance level. The direct influence of stress on readiness accounted for 22.47%, while the indirect influence was minimal (0.0012%). These findings align with stress theory, which defines stress as physical, psychological, emotional, and mental tension that affects daily functioning. Stress can reduce productivity and contribute to physical and mental health disorders. Stressors generate strain, which manifests as physical and emotional tension (Stuart & Sydeen, 2011; MacKenzie, 2012).

Women approaching menopause often experience declining bodily functions, leading to discomfort. A positive mindset—supported by adequate information and knowledge—enables women to better prepare physically, mentally, and spiritually, thereby reducing stress associated with menopause (Fatimah, 2010). Menopause readiness largely depends on how women manage stress. Economic stability facilitates access to health information and support resources, while chronic health conditions may exacerbate psychological vulnerability during this transitional phase (MacKenzie, 2012; Fatimah, 2010).

d. The Direct Influence of Physical Activity on Premenopausal Mothers' Readiness

The findings indicate that physical activity was not influenced by respondents' age, education, or occupation, as shown by chi-square test results with p-values greater than 0.05. Physical activity demonstrated a significant positive effect on readiness to face menopause. The t-statistic value of 4.756 exceeded the critical value of 1.96, indicating a statistically significant direct effect. The direct influence accounted for 31.89%, while the indirect effect was negligible. These results support theoretical perspectives suggesting that reduced physical activity during menopause, due to aging, is associated with decreased physical fitness. Insufficient exercise increases the risk of reduced bone density and calcium absorption. Moderate-intensity physical activity is recommended to maintain bone health, whereas excessive exercise is not advised for menopausal women (Fatimah, 2010).

Consistent with previous research, a strong correlation was found between physical activity and readiness to face menopause ( $r = 0.810$ ;  $p = 0.02$ ), indicating that physical activity contributes substantially to menopause readiness (Herawati, 2012). Socioeconomic conditions also indirectly influence readiness by facilitating access to health resources and information. Additionally, chronic health conditions may affect psychological readiness during menopause (Herawati, 2012; Fatimah, 2010). Women approaching menopause experience physiological decline that may disrupt daily functioning. Therefore, maintaining a positive mindset—supported by sufficient information and knowledge—is essential for achieving physical, mental, and spiritual preparedness during this life transition (Isnaeni, 2010; Fatimah, 2010).

## IV. Conclusion

The research findings suggest that physical activity is a dominant factor significantly influencing the preparedness of premenopausal women in community health centers. The study concluded that the higher the physical activity level of premenopausal women, the better their preparedness for menopause. Conversely, the lower the physical activity level, the worse their preparedness for menopause. The community, especially families, is expected to provide greater support and attention to premenopausal women so that they will not experience anxiety that could disrupt their lives and those of their families. Meanwhile, nurses, midwives, and integrated health post (Posyandu) cadres are expected to increase their role in providing guidance and counseling on menopause, its symptoms, and how to manage these symptoms, so that premenopausal women are prepared for menopause.

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