

## DATA ANALYSIS OF PREGNANT WOMEN IN YOGYAKARTA CITY 2020 – 2024

Isnaeny Yunita Rahmawati<sup>1</sup>, Nadiya Putri Khairunnisa<sup>2</sup>, & Rida Arshinta<sup>3</sup>

<sup>1</sup>Department of Biology Education, Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia, Email: [isnaenyrahma23@gmail.com](mailto:isnaenyrahma23@gmail.com)

<sup>2</sup>Department of Biology Education, Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia, Email: [nad.dyaputri346@gmail.com](mailto:nad.dyaputri346@gmail.com)

<sup>3</sup>Department of Biology Education, Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia, Email: [arshintaarida@gmail.com](mailto:arshintaarida@gmail.com)

Correspondence: Isnaeny Yunita Rahmawati

### Abstract

Pregnancy is an important physiological process in the human life cycle and plays a role in determining population growth dynamics in a region. Changes in the number of pregnant women can reflect the demographic, social, and economic conditions of a community. This study aims to analyse trends in the number of pregnant women in Yogyakarta City during the period 2020–2024 and identify trends based on descriptive statistical analysis. The research method used is a descriptive quantitative approach using secondary data obtained from official online sources such as government reports, statistical publications, and relevant scientific journals. The data analysed consisted of the number of pregnant women each year during the research period. The data collection technique was carried out through a literature study by searching for and documenting data relevant to the research area. The data obtained was then processed using descriptive statistical methods, including calculating the mean, median, range, and percentage decrease to see the pattern of change from year to year.

Research findings indicate that the number of pregnant women in Yogyakarta City has consistently declined over the past five years. In 2020, there were 3,386 pregnant women, then the number decreased to 3,153 in 2021, 3,014 in 2022, 2,756 in 2023, and reached 2,382 in 2024. Overall, there was a decrease of 1,004 cases, or nearly 30%, compared to the number in 2020. The average number of pregnant women during the study period was approximately 2,938 per year, with a median value of 3,014 and a data range of 1,004. Percentage analysis shows that the largest decline occurred in the 2023–2024 period at 13.56%, indicating that the downward trend has increased in the last two years of the study.

This decline in the number of pregnant women is thought to be influenced by various demographic and social factors developing in urban areas, such as the increasing age of marriage, the increasing participation of women in higher education and the workforce, and the increasing public awareness of family planning through the Family Planning (KB) programme. In addition, economic factors such as the high cost of living in urban areas can also influence the decisions of couples of childbearing age in planning the number of children they have. Changes in the lifestyle of urban communities, higher levels of education, and better access to information and reproductive health services have also contributed to the decline in pregnancy rates.

**Keywords:** Pregnant Women; Trends; Descriptive Statistics; Yogyakarta City.

### 1. INTRODUCTION

The pregnancy process begins with the growth and development of the foetus in the womb, starting from conception (the process of fertilisation) and ending at the onset of labour. The normal duration of pregnancy is 280 days (40 weeks, 9 months, 7 days), calculated from the first day of the last menstrual period (Cunningham et al., 2013). The process of sperm and egg meeting (fertilisation) occurs in the ampulla of the fallopian tube, resulting in

conception/fertilisation and the implantation of the fertilised egg (nidation/implantation) in the uterine wall until the birth of the foetus (Wati, 2023).

One of the measures taken by health workers to screen for this risk is to conduct early detection of complications/diseases that may occur during pregnancy. Pregnancy has signs and symptoms (pregnancy diagnosis) that can be identified to prevent complications/diseases that can affect pregnant women by undergoing a medical examination. Pregnancy is a physiological condition, but the importance of pregnancy diagnosis cannot be ignored (Saifuddin, 2010). There are two types of signs and symptoms of pregnancy, namely:

a. Signs of pregnancy

The foetus can be felt and its parts can be identified, the foetal heartbeat can be heard and recorded, foetal movements can be felt, an X-ray examination shows the foetal skeleton, but this is no longer done due to the effects of radiation on the foetus. With an ultrasound device, the foetal sac and length of the foetus can be determined, the age of the pregnancy can be estimated, and foetal growth can be assessed.

b. Uncertain signs of pregnancy

Skin pigmentation, approximately 12 weeks or more, leucorrhoea, increased cervical secretions due to the influence of increased progesterone hormones, epulis (gingival papilla hypertrophy), often occurs in the first trimester of pregnancy, breasts become tense and enlarged due to the influence of oestrogen and progesterone hormones that stimulate the ducts and alveoli of the breasts, the areola area becomes darker due to excessive pigment deposits.

Prenatal care is essential to ensure that pregnant women and their unborn babies remain healthy and are not exposed to any risks. Prenatal care is an ongoing programme that spans the entire pregnancy, delivery, and postnatal periods, comprising screening, education, early detection, treatment, prevention, and rehabilitation to provide comfort and safety, enabling mothers to care for their babies properly. Prenatal care is one of the factors that must be considered to prevent complications and mortality during childbirth, to ensure the growth and health of the foetus, and to maintain population growth in a particular area (Tamalla, 2022).

Pregnancy care that needs to be considered includes self-care, immunisation, participating in pregnancy exercise classes, getting adequate rest, regular pregnancy check-ups, and nutritional intake required by pregnant women. Many mothers are still unaware of the importance of pregnancy care. Because these risks are only discovered during childbirth, which is often too late, they can have fatal consequences, such as death (Cunningham, 2023).

The population size or number of pregnant women is also influenced by demographic factors, especially in urban areas. Demographic change is a dynamic and multidimensional socio-economic phenomenon, in which every shift in the composition of the population has direct and indirect consequences for the economic structure, labour productivity, and the direction of national development. This phenomenon not only reflects quantitative population growth, but also marks a transformation in the quality of human resources within a social system that continues to adapt to modernisation, globalisation, and technological advances. Conceptually, demographic dynamics encompass changes in age, gender, geographical distribution, education levels, and interregional mobility, which cumulatively influence the formation and structure of the labour market (Resa, 2025).

Based on the previous explanation, this study will analyse the number of pregnant women and the causes of the decline in the number of pregnant women. The researcher hopes that the analysis of the causes of the decline in the number of pregnant women can be used as a reference for birth control in a region.

## **2. MATERIALS AND METHODS**

### **2.1. Study Area**

This study was conducted in Yogyakarta City, Special Region of Yogyakarta, Indonesia. Yogyakarta City is one of the urban areas in Indonesia with relatively well-documented health statistics. The area was selected because it provides accessible and reliable health data published by government institutions and other official sources. The focus of this study is the number of pregnant women recorded in Yogyakarta City during the period 2020–2024. These data are used to observe trends and changes in the number of pregnant women over time as part of the description of maternal health conditions in the region.

### **2.2. Procedures**

The research procedures were carried out through several stages. First, researchers conducted a literature search to obtain relevant data related to the number of pregnant women in Yogyakarta City. Data were collected from credible online sources such as government websites, statistical reports, and scientific publications. Second, the obtained data were downloaded and documented for further processing. Third, the collected data were selected and verified based on several criteria, including relevance to the research location (Yogyakarta City), the time period of 2020–2024, and the completeness of the data required for analysis. Finally, the selected data were compiled and organized into tables to facilitate the next stage of analysis.

### **2.3. Data analysis**

The data were analyzed using descriptive statistical analysis. The analysis included calculating the average number of pregnant women, determining the percentage of change each year, and conducting trend analysis to observe the increase or decrease in the number of pregnant women during the 2020–2024 period. The results of the analysis were then presented in the form of graphs and charts to make the data easier to interpret and to clearly illustrate the trends in the number of pregnant women in Yogyakarta City over the observed years.

## **3. RESULTS AND DISCUSSION**

### **3.1. Result-1**

In health demography studies, the number of pregnant women is an important indicator that can describe the reproductive health conditions and population dynamics of a region. Data on the number of pregnant women can also be used to observe fertility trends, maternal health service needs, and the effectiveness of health programmes implemented by the government. Based on the data obtained, the number of pregnant women in Yogyakarta City in recent years has shown significant changes. These changes can be influenced by various factors, such as the socio-economic conditions of the community, the level of awareness of reproductive health, family planning programmes, and access to health care facilities. Therefore, analysis of the development of the number of pregnant women in Yogyakarta City is important to understand the patterns of change that are occurring and their implications for the planning and provision of maternal and child health services.

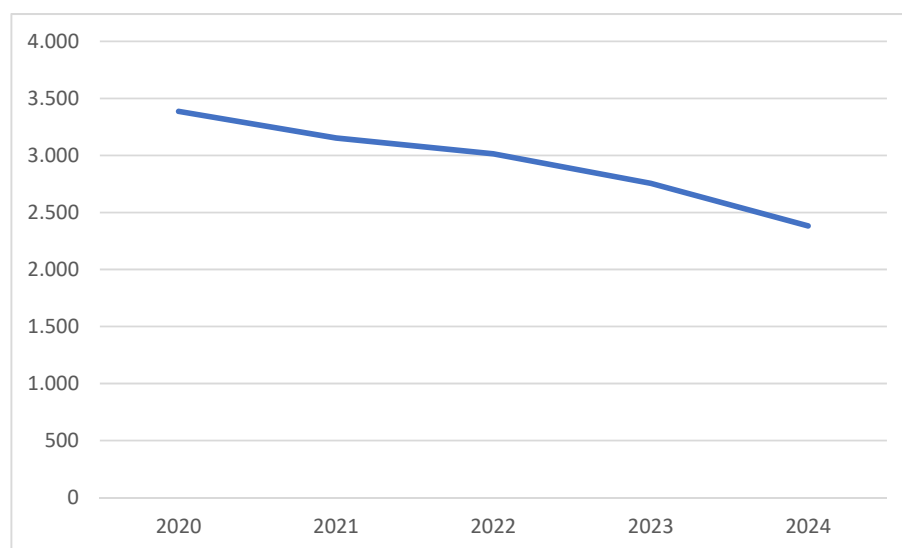
### **3.2. Result-2**

Based on Table 1, the accumulated data on pregnant women in Yogyakarta City show a consistent annual decline from 2020 to 2024. In 2020, there were 3,386 pregnant women. This number decreased to 3,153 in 2021 and further declined to 3,014 in 2022. The downward trend continued in 2023, reaching 2,756, and recorded its lowest figure in 2024 with 2,382 pregnant women.

Based on data analysis from the Yogyakarta City Government in recent years, the number of pregnant women in Yogyakarta City has demonstrated a clear declining trend. The decrease from 3,386 in 2020 to 2,382 in 2024 indicates a sustained reduction in the number of pregnancies in the Yogyakarta City area. This decline did not occur abruptly but reflects an ongoing demographic pattern over recent years, in line with changes in population structure and fertility rates in urban areas.

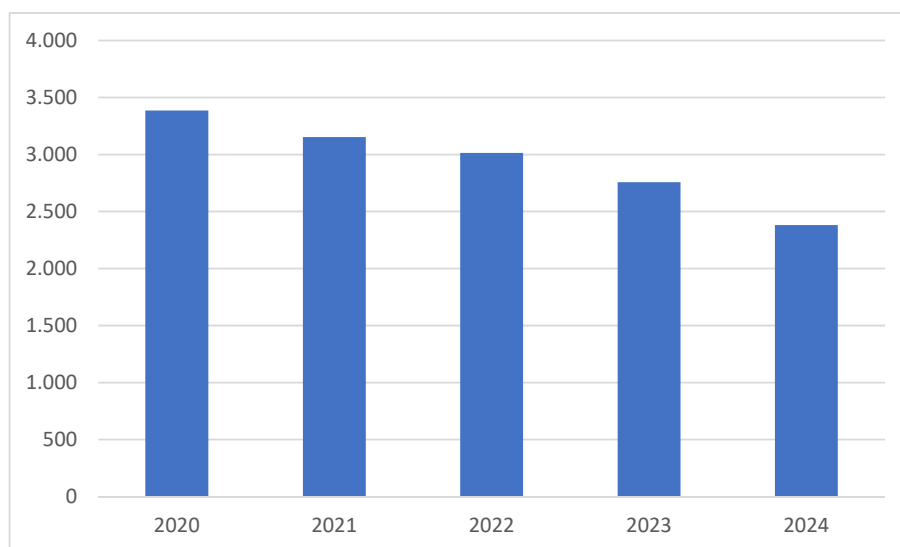
**Table 1. Data on the Number of Pregnant Women in Yogyakarta City**

No	Year	Total
1	2020	3.386
2	2021	3.153
3	2022	3.014
4	2023	2.756
5	2024	2.382



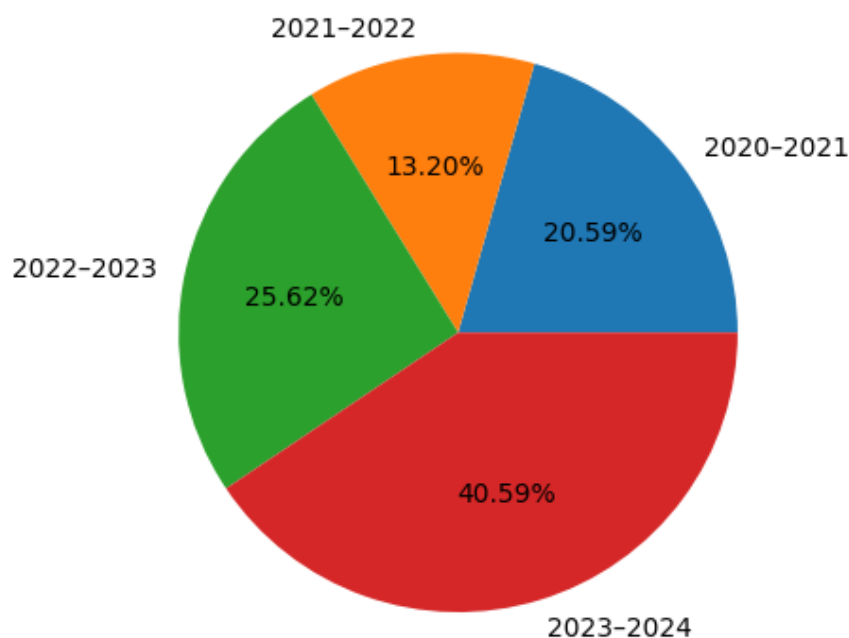
**Figure 1. Data on the Number of Pregnant Women in Yogyakarta City**

Based on Figure 1, overall, there was a decrease of 1,004 cases over a five-year period, representing a decline of nearly 30% compared to 2020. The maximum (highest) value occurred in 2020, with 3,386 pregnant women. Meanwhile, the minimum (lowest) value occurred in 2024, with 2,382 pregnant women.



**Figure 2. Average Number of Pregnant Women in Yogyakarta City**

Figure 2 shows that the number of pregnant women from 2020 to 2024 experienced a consistent downward trend. In 2020, the number was approximately 3,400, then decreased to around 3,150 in 2021 and 3,000 in 2022. The decline continued in 2023 to about 2,750 and reached approximately 2,400 in 2024. The average (mean) number of pregnant women over the five-year period is approximately 2,940 per year. The median value is 3,000 (in 2022), indicating that half of the data points are above this value and half are below it. The difference between the highest value (2020) and the lowest value (2024) is approximately 1,000, illustrating a fairly significant decrease from the beginning to the end of the observation period.



**Figure 3. Data on the Decline in the Number of Pregnant Women in Yogyakarta City**

The pie chart in Figure 3 illustrates the proportion of the decline in the number of pregnant women in each yearly period. The calculations indicate that the decrease did not occur at the same rate each year. In the 2020–2021 period, the number of pregnant women declined by 20.59% of the total decrease during the study period. This decline reflects the initial shift in the trend of pregnant women in Yogyakarta City. In the 2021–2022 period, the decline was only 13.20%, which was the smallest decrease compared to the other periods. This suggests that during this time, the number of pregnant women remained relatively more stable than in the following years. In the 2022–2023 period, the percentage of decline increased to 25.62%, indicating a more significant reduction compared to the previous two periods. The largest decline occurred in the 2023–2024 period, accounting for 40.59% of the total decrease, showing that the most substantial reduction took place at the end of the observation period.

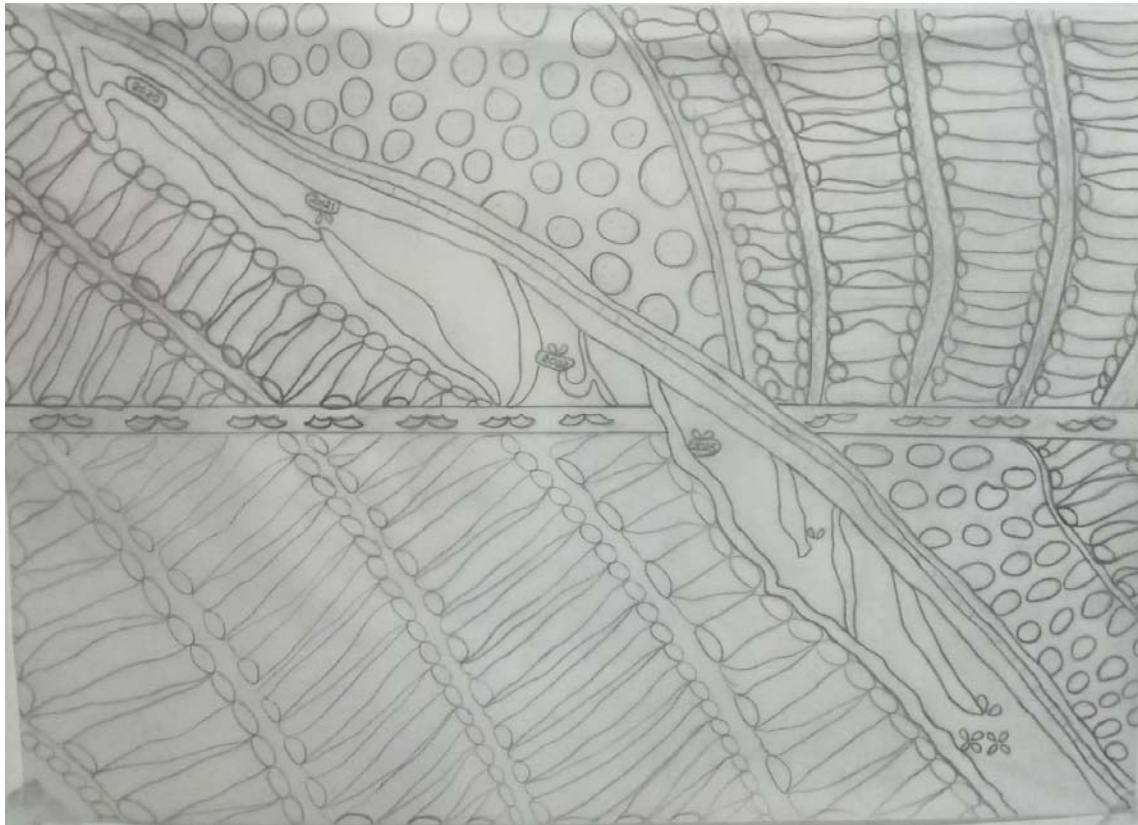
### 3.3. Discussion

This indicates that in the last year of the study, there was a significant decline in the number of pregnant women, reinforcing the downward trend in the number of pregnant women in Yogyakarta City during the period 2020 – 2024. Overall, this diagram shows that the decline in the number of pregnant women tends to increase from year to year, with the peak decline occurring in the period 2023 – 2024.

Demographically and socially, this decline can be attributed to the characteristics of Yogyakarta as a city of education and services, where most of the productive-age population consists of students and non-permanent workers. In addition, the increasing age of marriage, women's participation in higher education and the workforce, and increased awareness of family planning through the Family Planning (KB) programme have also contributed to the decline in pregnancy rates. Economic factors such as the relatively high cost of urban living have also encouraged couples of childbearing age to plan the number of children they have more rationally.

In the Yogyakarta area, social changes such as increased urbanisation, modernisation, and changes in family preferences regarding the number of children have been driving factors in the decline in fertility. This trend is also linked to increased access to education and reproductive health services, as well as contraceptive use, which ultimately influence families' decisions to limit the number of children they have.

Thus, statistical analysis shows that the number of pregnant women in Yogyakarta City has experienced an increasing, significant, and accelerating decline over the past five years. This phenomenon reflects changes in the social and demographic structure of urban communities, while also demonstrating the success of birth control. However, in the long term, this trend still needs to be monitored so that it does not impact the age structure of the population in the future.



**Figure 4. Batik motif on tracing paper**



**Figure 5. Motif batik**

The complete philosophy behind this batik motif, inspired by a downward trend graph, integrates spiritual, aesthetic, harmonious, and educational values that characterize Indonesian batik. The descending line motif, adapted into a diagonal curved pattern reminiscent of the Parang motif, symbolizes an unbroken spirit of struggle in facing life's challenges. The decline in data from 3,400 in 2020 to its lowest point in 2024 is interpreted not merely as a setback, but as a reminder of the cycle of life that teaches perseverance, resilience, and acceptance.

a. Spiritual Value

This motif embodies reflective and religious spiritual strength. The downward trend is interpreted as a prayer for renewal and inner purification, aligned with the philosophy of self-control and balance between worldly and spiritual life. In classical batik tradition, certain motifs were considered sacred and worn only in specific contexts; therefore, their creation required inner calmness and sincere intention so that they would bring blessings to the wearer.

b. Aesthetic Value

The symmetrical composition with geometric elements and bold color contrasts reflects the distinctive beauty of Yogyakarta batik. The descending lines, transformed into diagonal wave-like forms, create a dynamic and powerful impression, inspired by natural movements such as the waves of the southern sea. The combination of warm and cool tones reinforces a character that is both strong and elegant.

c. Value of Harmony

This descending motif teaches that decline is not division, but part of a process toward balance. Each design element complements one another within a unified whole, reflecting the spirit of unity in diversity. Harmony emerges from order, balance, and continuity among the motif's elements.

d. Educational Value

The process of creating and understanding this motif fosters perseverance, precision, and creativity. The art of batik requires long-term consistency and patience. Its underlying philosophy also encourages character development, especially among the younger generation, so they are able to face the “downward phases” of life with determination and the spirit to rise again.

#### 4. CONCLUSION

Based on the results of data analysis on the number of pregnant women in Yogyakarta City during the 2020–2024 period, it can be concluded that there has been a consistent downward trend in the number of pregnant women from year to year. In 2020, there were 3,386 pregnant women, then the number decreased to 3,153 in 2021, 3,014 in 2022, 2,756 in 2023, and reached its lowest point in 2024 with 2,382 women. Overall, during this five-year period, there was a decrease of 1,004 cases, or nearly 30%, compared to the number in 2020. These results indicate that the number of pregnant women in Yogyakarta City has decreased significantly.

Descriptive statistical analysis also shows that the average number of pregnant women over the last five years was approximately 2,938 per year, with a median value of 3,014. The data range between the highest and lowest values was 1,004, which illustrates a significant difference between the number of pregnant women at the beginning and end of the study period. From the results of the percentage decrease analysis, it is known that the largest decrease occurred in the 2023–2024 period, which was 13.56%, while the smallest decrease occurred in the 2021–2022 period, which was 4.41%. This shows that the decline in the number of pregnant women did not occur constantly but fluctuated while still showing a downward trend over time.

The decline in the number of pregnant women in Yogyakarta City may be influenced by various demographic, social, and economic factors developing in urban areas. Yogyakarta City is known as a city of education and services with a dynamic population, including many students, young workers, and residents from various regions. These conditions can influence people's lifestyles, including family planning and decisions to have children. In addition, the increasing age of marriage, high levels of female education, and increased participation of women in the workforce also influence the decisions of couples of childbearing age in planning their pregnancies.

Another contributing factor is the increased public awareness of the importance of family planning through the Family Planning (KB) programme and easier access to reproductive health services. Government programmes on birth control and reproductive health education may also contribute to the decline in pregnancy rates. In addition, the economic conditions of urban communities, which require more careful financial planning, may also influence families' decisions on the number of children they have.

Overall, the results of this study indicate that the number of pregnant women in Yogyakarta City has experienced a significant downward trend during the period 2020–2024. This phenomenon reflects changes in the social, economic, and demographic structure of urban communities. Although the decline in the number of pregnancies may indicate the success of birth control programmes and increased public awareness of family planning, this trend still needs to be monitored continuously. Such monitoring is important to understand its impact on population structure, population growth, and future development planning.

If this downward trend continues in the long term, it could affect the age composition of the population and the potential number of productive generations in the future. Therefore, it is necessary for various parties, including the government, health workers, and the community, to continue monitoring the dynamics of the number of pregnant women and ensure that maternal and child health services continue to run well and evenly.

## 5. ACKNOWLEDGEMENT

The author would like to express sincere gratitude to Batik Ghakhuka, Batik Matematika for their inspiration, collaboration, and valuable contributions to the development of this work. Their creativity in integrating cultural heritage with mathematical concepts has greatly enriched this study. Special appreciation is also extended to all parties who have supported the research and development process.

## 6. REFERENCES

- Cunningham. (2023). *Obstetri Williams (Williams Obstetri)*.
- Kurniawati, A. (t.t.). *KARAKTERISTIK IBU HAMIL DENGAN PENGETAHUAN DAN SIKAP DALAM MENGENAL TANDA BAHAYA KEHAMILAN* (Bag. 1). 2.
- Resa, A. (2025). *DINAMIKA DEMOGRAFIS DAN IMPLIKASINYA TERHADAP POLA WORKFORCE: KAJIAN KUALITATIF DI KOTA BANDAR LAMPUNG*. XX–XX. <https://doi.org/10.62281>
- Saifuddin. (2010). *Ilmu Kebidanan*.
- Tamalla. (2022). *Literasi Kesehatan terhadap Perilaku Perawatan Kehamilan Usia Remaja*. 1, 47–53.
- Wati, E. (2023). *ENERAPAN PENDIDIKAN KESEHATAN TENTANG TANDA BAHAYA KEHAMILAN UNTUK MENINGKATKAN PENGETAHUAN IBU HAMIL PRIMIGRAVIDA DI WILAYAH KERJA UPTD PUSKESMAS PURWOSARI KEC. METRO UTAR*. 3.