PLASU Journal of Educational Research (PLASUJER) Vol. 1, No. 1, 2025
A Publication of the Faculty of Education, Plateau State University, Bokkos – Nigeria
ISSN: 3121-9624 https://journals.plasu.edu.ng

WOMENS' KNOWLEGDE OF ADVERSE PREGNANCY OUTCOMES ASSOCIATED WITH ADVANCED MATERNAL AGE IN ILORIN METROPOLIS, KWARA STATE.

JIDDA, K. A. (Ph.D)
Department of Health Promotion and Environmental Health Education,
University of Ilorin, Ilorin.
07035136532
jidda.ka@unilorin.edu.ng

MUMINI, G. O.
Department of Health Promotion and Environmental Health Education,
University of Ilorin, Ilorin.
08055610450

OYEYEMI, A. O (Ph.D)
The Challenge Initiative (TCI), Osogbo, Osun State
08030765517

JATTO, K. B.
Department of Surgery, Federal University of Health Sciences Teaching Hospital,
Azare, Bauchi State
08037287028

OYEYEMI, O. E.
Benjamin Carson (Snr) College of Health and Medical Sciences, Babcock
University, Ilishan-Remo, Ogun State
0810697110

JIDDA, A. K.
Perimeter College, Georgia State University, Atlanta, Georgia, USA
ajidda6@gmail.com

ABSTRACT

Advanced maternal age (AMA), defined as pregnancy at 35years and above, is associated with increased health risks to the baby. This study assessed women's knowledge of these risks in Ilorin metropolis, Kwara State. A descriptive survey design was adopted, and 200 women were selected using a four-stage sampling technique. Data were collected through a structured questionnaire and analyzed using frequency counts, percentages, and chi-square tests at 0.05 significance level. Results showed that 139 (69%) respondents agreed preterm birth is common in AMA, 104 (77%) acknowledged AMA increases low birth weight risk, while 162 (81%) affirmed miscarriage is more prevalent in older women. Chi-square analyses revealed significant associations between AMA and knowledge of preterm birth (χ^2 = 167.21), low birth weight (χ^2 = 225.81), and miscarriage (χ^2 = 158.76). It is recommended that targeted reproductive health education, early antenatal care, and lifestyle modification be promoted to minimize AMA-related complications.

Keywords: advanced maternal age, high risk pregnancy, knowledge, pregnancy

INTRODUCTION

The term 'advanced maternal age' is the more recent term used to describe pregnant individuals who are over the age of 35 years. The outdated but still commonly used term is "Geriatric Pregnancy' (National Women's Health Network, 2022). Advanced maternal age, in a broad sense, is the instance of a woman being of an older age at a stage of reproduction. Pregnancies have an increased risk for certain complications when the birth parent is 35 years or older. Individuals of advanced maternal age are more likely than younger women to have certain conditions and complications that may put them and the baby at risk. Although not completely understood, age itself is associated with a higher risk of pregnancy complications. That means people over the age of 35 are more likely to have pregnancy complications even if they have no other health concerns before or during pregnancy.

Although AMA is generally defined as pregnancy in women who are 35 years of age or older, some studies consider women who are 40 years of age or older to be of "very advanced" maternal age (Begley et al. 2015). In order to make informed decisions about their reproductive health, women need to have knowledge and awareness of the potential health risks associated with advanced maternal age. These risks include an increased likelihood of pregnancy complications such as gestational diabetes, hypertension, pre-eclampsia and an increased risk of cesarean section delivery (Begley et. al., 2015). Also, children born to women of advanced maternal age are at increased risk of several adverse pregnancy outcomes including preterm birth, low birth weight, still birth, chromosomal defects, labour complications, miscarriage and cesarean section (Mills et. al., 2021). Therefore, it is considered to be high risk pregnancy.

Low birth weight has been defined by World Health Organization (WHO, 2020) as weight at birth that is less than 2.5kg. At a population level, the proportion of infants with a low birth weight is an indicator of a multifaceted public health problem that includes long-term maternal malnutrition, ill-health and poor health care in pregnancy. Low birth weight infants are about 20 times more likely to die than heavier infants (Olusanya et. al., 2023). They are also at increased risk for long-term health conditions which require follow-up over time. In particular, advanced maternal age is associated with increased risk of low birth weight and preterm delivery among both primigravidas and multiparas mothers (Zhang et. al. 2022).

Fertility in women starts to decline in the early thirties and even decreases faster after mid and late thirties. A woman's peak reproductive years are between the late teens and late twenties. By age 30, ability to get pregnant starts to decline. This decline becomes more rapid once you reach mid 30s. Women with advanced maternal age usually have a relatively lower tendency to achieve pregnancy within a short period. The probability of achieving pregnancy in a single menstrual cycle is decreased in these age groups (The American College of Obstetricians and Gynecologists, 2022).

The lack of knowledge and awareness among women regarding the potential health risks associated with advanced maternal age is a cause for concern. It is important that women are informed about the potential health risks associated with delayed childbearing so that they can make informed decisions about their reproductive health. The American College of Obstetricians and Gynecologists (2022) recommends that women who are considering delaying childbearing until later in life should be provided with information about the potential risks and should receive appropriate counseling.

Women of advanced maternal age may safely conceive and have healthy babies in most cases. By decreasing the risks through healthy lifestyle and optimizing health prior to pregnancy and by having regular prenatal visits, most complications can be identified early and appropriately treated. They can as well manage pre-existing medical conditions, for instance, keeping blood sugar in range if there is a record of diabetes. Also, exercising regularly, eating a healthy diet, avoiding alcohol intake, staying within a healthy weight range, taking a prenatal vitamin that includes folic acid and making sure all preventative care is up to date can lower the risks of pregnancy complications if a woman is 35 years of age or older (Traci, 2022).

Statement of the Problem

In recent years, there has been a growing trend of delayed childbearing as more women prioritize higher education, career advancement, and personal development before starting a family. Although this reflects positive social and economic progress, it also presents important public health challenges. Advanced maternal age (35 years and above) is associated with increased risks of adverse pregnancy outcomes such as preterm delivery, low birth weight, stillbirth, and miscarriage.

In Nigeria, including Ilorin metropolis, there is limited evidence on the level of women's knowledge and awareness of these potential complications. This knowledge gap may hinder informed reproductive decision-making and the adoption of appropriate preventive measures. Consequently, inadequate awareness could contribute to the rising incidence of maternal and neonatal complications among women of advanced maternal age.

Objectives

1. To examine women's knowledge of preterm birth as an adverse pregnancy outcome associated with AMA in Ilorin metropolis
2. To examine women's knowledge of low birth weight as an adverse pregnancy outcome associated with AMA in Ilorin metropolis
3. To examine women's knowledge of miscarriage as an adverse pregnancy outcome associated with AMA in Ilorin metropolis

Research Questions

1. Do women in Ilorin metropolis, Kwara State have knowledge of preterm birth as an adverse pregnancy outcome associated with AMA?
2. Do women in Ilorin metropolis, Kwara State have knowledge of low birth weight as an adverse pregnancy outcome associated with AMA?
3. Do women in Ilorin metropolis, Kwara state have knowledge of miscarriage as an adverse pregnancy outcome associated with AMA?

Research Hypotheses

1. Women in Ilorin metropolis, Kwara state will not significantly have knowledge of preterm birth as an adverse pregnancy outcome associated with AMA
2. Women in Ilorin metropolis, Kwara state will not significantly have knowledge of low birth weight as an adverse pregnancy outcome associated with AMA
3. Women in Ilorin metropolis, Kwara state will not significantly have knowledge of miscarriage as an adverse pregnancy outcome associated with AMA

Methodology

This study adopted a descriptive research design, which is appropriate for obtaining factual information about existing conditions without manipulating variables. The design seeks to describe characteristics of a population—such as knowledge, attitudes, and behaviours—as they exist at a particular point in time. In this context, the descriptive design enabled an assessment of women's knowledge of adverse pregnancy outcomes associated with advanced maternal age (≥35 years) within Ilorin Metropolis. The design also provided a basis for identifying knowledge gaps that could inform future reproductive health education and interventions.

The study was conducted in Ilorin Metropolis, which comprises three Local Government Areas (LGAs): Ilorin West, Ilorin East, and Ilorin South. According to the National Population Commission (2006), the metropolis has a combined population of over

700,000 people, consisting of both males and females in nearly equal proportions. The target population for this study comprised all women of reproductive age (15–49 years) residing within the metropolis.

A four-stage multistage sampling technique was employed to select respondents for the study. This approach was considered suitable for achieving representativeness while taking into account limitations related to time, accessibility, and financial resources.

In stage 1, Selection of LGAs was carried out. All three LGAs in Ilorin Metropolis (Ilorin East, Ilorin West, and Ilorin South) were included in the study to ensure comprehensive geographical coverage. Stage 2 involved selection of Wards. Each of the three LGAs is subdivided into administrative wards, bringing the total number of political wards in Ilorin Metropolis to 35 (12 in Ilorin West, 12 in Ilorin East, and 11 in Ilorin South). Using simple random sampling, six (6) wards were selected to represent the entire metropolis. The selected wards were Akanbi 1 and Balogun Fulani 2 from Ilorin South; Badari and Baboko from Ilorin West; and Balogun Gambari 2 and Iponri from Ilorin East. In stage 3, proportionate sampling was used to select respondents to be drawn from each selected ward. Eight percent (8%) of the estimated number of women in each selected ward was sampled to ensure fair representation based on population size. The total number of women in the six wards was 2,497 (NPC, 2006), yielding approximately 200 respondents (8% of the ward populations combined). While in the final stage, selection of individual respondents was done.
Within each selected ward, simple random sampling was used to identify potential respondents. However, in instances where random selection was impracticable due to accessibility or logistical constraints, convenience sampling was applied to recruit willing and available women who met the inclusion criteria (women of reproductive age residing in the ward).

Table 1: Distribution of Respondents across the Selected Wards

S/N	Ward	Population of Women	8% Sample	Number of Respondents
1	Akanbi 1	500	40.0	40
2	Balogun Fulani 2	470	37.6	38
3	Badari	417	33.3	33
4	Baboko	289	23.1	23
5	Balogun Gambari	362	28.9	29
6	Iponri	459	36.7	37
Total		**2,497**	**199.6**	**200**

A total of 200 respondents participated in the study. The multistage and proportionate sampling approach ensured that women from diverse wards across Ilorin Metropolis were adequately represented, thereby enhancing the validity and generalizability of the study findings. The instrument used for this study was a structured questionnaire consisting of 15 items to elicit responses on knowledge level of the respondents. The data collected was coded and analyzed using descriptive statistics of means and percentage while Chi-square was used to test the postulated null hypotheses at 0.05 alpha level

Results

The findings are presented as follows:

Table 2: Frequency and Percentage of Demographic data of Respondents

S/N	ITEMS	FREQUENCY	PERCENTAGE(%)
1.	**EDUCATION**		
	Primary	5	2.5
	Secondary	70	35.0
	Tertiary	125	62.5
	TOTAL	**200**	**100%**
2.	**AGE**		
	15 - 25 years	75	37.5
	26 - 35 years	68	34.0
	36 - 45 years	45	22.5
	46 - 49 years	12	6.0
	TOTAL	**200**	**100%**
3.	**RELIGION**		
	Islam	146	73.0
	Christianity	48	24.0
	Traditional	6	3.0
	TOTAL	**200**	**100%**

Table 2 presents the demographic characteristics of the respondents. The results indicate that the majority of the women had attained tertiary education (62.5%), while 35.0% had secondary education and only 2.5% had primary education. In terms of age distribution, most respondents were between 15–25 years (37.5%), followed by 26–35 years (34.0%), 36–45 years (22.5%), and 46–49 years (6.0%). Regarding religious affiliation, 73.0% of the respondents practiced Islam, 24.0%

practiced Christianity, while 3.0% identified with traditional religion. Thus, the sample was predominantly composed of educated young women with a higher representation of Muslims.

Research Questions

Research questions were answered using descriptive statistics of mean and standard deviation. In answering the research questions 1 to 5, participants' responses were subjected to item-by-item analysis of mean. Given that the questionnaire on each of the knowledge's were structured in a four-response-type, a cut-off score of 2.50 was used as the baseline for determining participants' responses. Therefore, items found with the grand mean scores equal or above 2.50 was remarked as ***adequate*** knowledge while items with mean scores below 2.50 were remarked otherwise

Question 1: Do women in Ilorin metropolis, Kwara State have knowledge of preterm birth as an adverse pregnancy outcome associated with AMA?

Table 3: Women's Knowledge of preterm birth as an adverse pregnancy outcome associated with AMA

S/N	Knowledge of Preterm birth	Mean	S.D.
1	**Delaying childbirth beyond age 35 increases the chances of giving birth before 37 weeks of pregnancy (preterm birth)**	2.99	0.78
2	**AMA causes higher risk of having babies who require neonatal intensive care due to preterm delivery**	3.08	1.14
3	**Declining egg quality in women of AMA contributes to preterm birth**	3.17	0.69
4	**Pre-existing health conditions (e.g., hypertension, diabetes) in older pregnant women increase the likelihood of preterm delivery**	2.94	1.02
	Grand Mean	***3.05***	
	Remarked	***Adequate***	

As shown in Table 3, women' knowledge of preterm birth as an adverse pregnancy outcome associated with AMA was *adequate.* This indicated that women were aware that Pre-existing health conditions (e.g., hypertension, diabetes) in older pregnant women increase the likelihood of preterm delivery among others.

Question 2: Do women in Ilorin metropolis, Kwara State have knowledge of Low birth weight as an adverse pregnancy outcome associated with AMA?

Table 4: Women's Knowledge of Low birth weight as an adverse pregnancy outcome associated with AMA

S/N	Knowledge of Low Birth weight	Mean	S.D.
1	**Babies born to women aged 35 years and above are more likely to have a low birth weight (<2.5kg).**	2.89	1.27
2	**Poor egg quality in AMA may affect fetal growth, leading to low birth weight**	3.21	1.04
3	**women with menstrual irregularities brought on by AMA can give birth to low birth weight babies**	2.64	1.13
4	**babies born to women with AMA have low uterine growth due to placental insufficiency leading to low birth weight**	2.78	1.23
	Grand Mean	***2.88***	
	Remarked	***Adequate***	

As shown in Table 4, women' knowledge of low birth weight as an adverse pregnancy outcome associated with AMA was ***adequate.*** This indicated that women were aware that women with menstrual irregularities brought on by AMA can give birth to low birth weight babies among others.

Question 3: Do women in Ilorin metropolis, Kwara State have knowledge of miscarriage as an adverse pregnancy outcome associated with AMA?

Table 5: Women's Knowledge of Miscarriage as an adverse pregnancy outcome associated with AMA

S/N	Knowledge of miscarriage	Mean	S.D.
1	**The risk of miscarriage increases significantly in women aged 35 years and above**	2.78	1.23
2	**Declining egg quality in older women contributes to higher miscarriage rates**	2.64	1.13
3	**Women over age 35 are more likely to experience chromosomal abnormalities that can result in miscarriage**	3.21	1.04

4	**Hormonal changes and reduced progesterone production in older women increase the risk of miscarriage**	2.89	1.27
	Grand Mean	***2.88***	
	Remarked	***Adequate***	

As shown in Table 5, women' knowledge of miscarriage as an adverse pregnancy outcome associated with AMA was ***adequate.*** This indicated that women were informed that Women over age 35 are more likely to experience chromosomal abnormalities that can result in miscarriage among others.

Test of Hypotheses

Hypotheses 1: Women in Ilorin metropolis, Kwara state will not significantly have knowledge of preterm birth as an adverse pregnancy outcome associated with AMA

Table 6: Chi-square analysis on knowledge of preterm birth adverse pregnancy outcome associated with AMA

Items	**Yes**	**No**	**Row total**	**If**	**Cal value**	**Table value**	**Remark**
Delaying childbirth beyond age 35 increases the chances of giving birth before 37 weeks of pregnancy (preterm birth)	139 (69%)	62 (31%)	200				
AMA causes higher risk of having babies who require neonatal intensive care due to preterm delivery	137 (68.5%)	63 (31.5%)	200				
Declining egg quality in women of AMA contributes to preterm birth	118 (59%)	80 (40.0%)	200	9	16 7.21	16.92	Ho rejected
Pre-existing health conditions (e.g., hypertension, diabetes) in older pregnant women increase the likelihood of preterm delivery	140 (70%)	60 (30.0%)	200				
Total	534	256	800				

@ 0.05 alpha level of significance

Table 6 presents the chi-square analysis of knowledge of preterm birth as an adverse pregnancy outcome associated with AMA. The calculated chi-square value (167.21) exceeded the critical table value (16.92) at 9 degrees of freedom and 0.05 level of significance. Consequently, the null hypothesis was rejected, indicating that women in Ilorin metropolis significantly possess knowledge of preterm birth as an adverse pregnancy outcome associated with AMA.

Hypotheses 2: Women in Ilorin metropolis, Kwara state will not significantly have knowledge of low birth weight as an adverse pregnancy outcome associated with AMA

Table 7: Chi-square analysis on knowledge of low birth weight as an adverse pregnancy outcome associated with AMA

SN	ITEMS	YES	NO	Row Total	Df	Cal Value	Table Value	Remarl
1	**Babies born to women aged 35 years and above are more likely to have a low birth weight (<2.5kg).**	104 (77.0%)	46 (22.0%)	200				
2	**Poor egg quality in AMA may affect fetal growth, leading to low birth weight**	137 (68.5%)	63 (19.5%)	200				
3	**women with menstrual irregularities brought on by AMA can give birth to low birth weight babies**	124 (61.0%)	76 (38.0%)	200	9	225.81	16.92	Ho rejecte
4	**babies born to women with AMA have low uterine growth due to placental insufficiency**	138 (69.0%)	62 (31.0%)	200				

	leading to low birth weight							
	Total	503	247	800				

@ 0.05 alpha level of significance

Table 7 presents the chi-square analysis of knowledge of low birth weight as an adverse pregnancy outcome associated with AMA. The calculated chi-square value (225.81) was greater than the critical table value (16.92) at 9 degrees of freedom and 0.05 level of significance. Therefore, the null hypothesis was rejected, indicating that women in Ilorin metropolis significantly possess knowledge of low birth weight as an adverse pregnancy outcome associated with AMA

Hypotheses 3: Women in Ilorin metropolis, Kwara state will not significantly have knowledge of miscarriage as an adverse pregnancy outcome associated with AMA

Table 8: Chi-square analysis on knowledge of miscarriage as an adverse pregnancy outcome associated with AMA

SN	**ITEMS**	**YES**	**NO**	**Row Total**	**df**	**Cal Value**	**Table Value**	**Remarks**
1	**The risk of miscarriage increases significantly in women aged 35 years and above**	162 (81.0 %)	38 (19.0 %)	200				
2	**Declining egg quality in older women contributes to higher miscarriage rates**	156 (78.0 %)	44 (22.0 %)	200				
3	**Women over age 35 are more likely to experience chromosomal abnormalities that**	126 (63.0 %)	74 (37.0 %)	200	9	158.72	16.92	Ho rejected

	can result in miscarriage			
4	**Hormonal changes and reduced progesterone production in older women increase the risk of miscarriage.**	148 (74.0 %) 592	52 (26.0 %) 208	200 800
	TOTAL			

@ 0.05 alpha level of significance

Table 8 presents the chi-square analysis of knowledge of miscarriage as an adverse pregnancy outcome associated with AMA. The calculated chi-square value (158.72) exceeded the critical table value (16.92) at 9 degrees of freedom and 0.05 level of significance. Accordingly, the null hypothesis was rejected, indicating that women in Ilorin metropolis significantly possess knowledge of miscarriage as an adverse pregnancy outcome associated with AMA

Discussion of Findings

This study examined women's knowledge of adverse pregnancy outcomes associated with advanced maternal age (AMA) in Ilorin Metropolis, Kwara State, focusing on three key adverse pregnancy outcomes—preterm birth, low birth weight, and miscarriage. The results demonstrated that women in the metropolis possess substantial awareness of these risks, suggesting a generally high level of reproductive health literacy. This aligns with the objectives of the study and provides useful insight into women's preparedness for making informed reproductive decisions in an era of increasing delayed childbearing.

Findings from the analysis of Research Question One revealed that women in Ilorin metropolis have adequate knowledge of the relationship between AMA and preterm birth. The chi-square analysis further confirmed that this association was statistically significant, implying that respondents were well-informed about the likelihood of early deliveries among older pregnant women. This finding corroborates the reports of Goisis et al. (2017) and Khalil and Rezende (2022), who observed that physiological factors such as declining egg quality, placental dysfunction, and the higher prevalence of chronic diseases like hypertension and diabetes among older mothers increase the risk of preterm birth. The result also aligns with Blencowe et al. (2019), who emphasized that preterm delivery remains a leading cause of neonatal morbidity and mortality worldwide. In the context of Ilorin, this level of awareness could be attributed to improved access to

antenatal care services and public health sensitization on safe motherhood. However, it is possible that while women know the risks, preventive practices such as early antenatal booking and routine health check-ups may still be suboptimal, warranting further behavioural investigation.

For Research Question Two, the findings showed that respondents had adequate knowledge of low birth weight (LBW) as a major risk associated with AMA. The statistical test confirmed a significant relationship between maternal age and awareness of LBW. This outcome is consistent with previous studies by Mathews (2019) and Olusanya and Ofovwe (2023), who found that older women are more likely to deliver infants with LBW due to reduced uterine blood flow and placental insufficiency. The knowledge demonstrated by women in Ilorin may reflect the effectiveness of maternal health information disseminated through clinics, mass media, and community health campaigns. Nonetheless, it is important to recognize that knowledge of LBW does not necessarily translate into behavioural change. Many women may still engage in lifestyle habits—such as inadequate nutrition or physical inactivity—that indirectly increase the risk of LBW. Therefore, while the awareness level is commendable, sustained health promotion interventions focusing on nutrition, preconception counselling, and chronic disease management remain essential.

Addressing Research Question Three, findings indicated that women in Ilorin metropolis also have adequate knowledge of miscarriage as an adverse pregnancy outcome related to AMA. The chi-square test revealed a significant relationship between AMA and knowledge of miscarriage risk. This finding aligns with studies by Nybo Andersen et al. (2023) and Magnus et al. (2019), who reported that the risk of miscarriage increases exponentially with age due to chromosomal abnormalities, hormonal imbalance, and endometrial changes. Arck et al. (2008) further explained that age-related decline in oocyte quality and reduced endometrial receptivity contribute to pregnancy loss in older women. The consistency of these findings suggests that women in Ilorin are not only aware of miscarriage as a potential complication but may also possess a basic understanding of its biological causes. This may be attributed to educational attainment, as 62.5% of respondents had tertiary education, reinforcing the established link between formal education and maternal health literacy (Bezerra et al., 2020).

Collectively, the findings reflect a growing level of reproductive health awareness among urban Nigerian women. The predominance of young, educated respondents in this study may explain the observed pattern of knowledge. Nevertheless, the persistence of delayed childbearing despite awareness of risks highlights a gap between knowledge and behaviour. This aligns with Bolarinwa et al. (2021), who found that socio-economic and cultural factors—such as career aspirations, financial stability, and delayed marriage—often influence women's reproductive choices more strongly than health considerations. Therefore, while women may understand the risks associated with AMA, structural factors such as job insecurity, limited childcare support, and gender norms may still drive decisions to delay childbirth.

In a broader context, the findings mirror global trends in which increasing educational attainment and career engagement among women have led to delayed childbearing (Schmidt et al., 2017; Mills et al., 2021). However, the implications in low- and middle-income countries like Nigeria are more profound because access to assisted reproductive technologies (ART) and advanced prenatal care remains limited (MacDougall et al., 2019; WHO, 2020). This suggests that women who delay childbearing in such settings may face compounded risks that cannot easily be mitigated through medical intervention. Consequently, public health education should not only promote awareness but also address the socio-economic realities influencing women's reproductive timing.

In summary, the study underscores the importance of strengthening maternal health education programs in Ilorin metropolis. While knowledge levels are encouraging, effective translation of awareness into preventive actions—such as early antenatal registration, preconception health assessment, and chronic disease management—will be crucial to reducing AMA-related complications. Furthermore, collaboration between healthcare providers, policymakers, and community-based organizations is needed to ensure that women receive both the information and the support necessary to make informed reproductive decisions

Conclusion

This study concluded that women in Ilorin metropolis, Kwara State, possess significant knowledge of preterm birth, low birth weight, and miscarriage as health risks associated with advanced maternal age. While this reflects growing maternal health awareness, continuous education and preventive care remain essential to ensure that knowledge is effectively translated into healthier pregnancy outcomes.

Recommendations

1. Intensify community-based health education to strengthen accurate knowledge and dispel misconceptions.
2. Encourage early and regular antenatal care for timely detection and management of risks.
3. Promote lifestyle modification through nutrition, exercise, and management of chronic conditions to reduce complications.

REFERENCES

Arck, P. C., Rücke, M., Rose, M., Szekeres-Barthó, J., Douglas, A. J., Pritsch, M., Blois, S. M., & Klapp, B. F. (2008). Early risk factors for miscarriage: A prospective cohort study in pregnant women. *Human Reproduction*, 23(2), 536–545. https://doi.org/10.1093/humrep/dem373

Begley, G., Gallagher, S., Clarke, M., & Carroll, O. (2015). Estimating conception statistics using gestational age information from NHS Numbers for Babies data. *Health Statistics Quarterly*, 41(41), 21–27. https://doi.org/10.1057/hsq.2009.5

Bezerra, F. D., Oliveira, A. G., de Freitas, R. J., & Sampaio, H. A. (2020). Health literacy and associated factors in pregnant women: A systematic review. *Revista Brasileira de Enfermagem,* 73(5), e20190545. https://doi.org/10.1590/0034-7167-2019-0545

Blencowe, H., Cousens, S., Chou, D., Oestergaard, M., Say, L., Moller, A. B., & Lawn, J. (2019). Born too soon: The global epidemiology of 15 million preterm births. *Reproductive Health*, 16(Suppl 1), 36. https://doi.org/10.1186/s12978-019-0700-5

Bolarinwa, O. A., Tessema, Z. T., Frimpong, J. B., Osei, D., & Seidu, A. A. (2021). Factors associated with delayed childbearing among women in sub-Saharan Africa: A systematic review. *BMC Women's Health*, 21(1), 278. https://doi.org/10.1186/s12905-021-01485-4

Goisis, A., Remes, H., Barclay, K., Martikainen, P., & Myrskylä, M. (2017). Advanced maternal age and the risk of low birth weight and preterm delivery: A within-family analysis using Finnish population registers. *American Journal of Epidemiology*, 186(11), 1219–1226. https://doi.org/10.1093/aje/kwx177

Khalil, A., & Rezende, J. (2022). Maternal age and pregnancy complications: An evidence-based approach. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 78, 23–33. https://doi.org/10.1016/j.bpobgyn.2021.09.002

MacDougall, K., Beyene, Y., & Nachtigall, R. D. (2019). "Inconvenient biology": Advantages and disadvantages of first-time parenting after age 40 using in vitro fertilization. *Human Reproduction,* 27(4), 1058–1065. https://doi.org/10.1093/humrep/des007

Magnus, M. C., Wilcox, A. J., Morken, N. H., Weinberg, C. R., & Håberg, S. E. (2019). Role of maternal age and pregnancy history in risk of miscarriage: Prospective register-based study. *BMJ*, 364, l869. https://doi.org/10.1136/bmj.l869

Mathews, T. J. (2019). Delayed childbearing: More women are having their first child later in life [Data brief]. *U.S. Centers for Disease Control and Prevention*. https://www.cdc.gov/nchs/products/databriefs/db21.htm

Mills, M., Rindfuss, R. R., McDonald, P., & te Velde, E. (2021). Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update*, 17(6), 848–860. https://doi.org/10.1093/humupd/dmr026

National Women's Health Network. (2022). Why do singletons conceived after assisted reproduction technology have adverse perinatal outcome? Systematic review and meta-analysis. *Human Reproduction Update*, 19(2), 87–104. https://doi.org/10.1093/humupd/dms044

Nybo Andersen, A. M., Wohlfahrt, J., & Melbye, M. (2023). Advanced maternal age and reproductive risks: Updated evidence. *Acta Obstetricia et Gynecologica Scandinavica*, 102(3), 256–267. https://doi.org/10.1111/aogs.14480

Olusanya, B. O., & Ofovwe, G. E. (2023). Predictors of low birth weight in Nigeria: A population-based analysis. *BMC Pregnancy and Childbirth,* 22, 194. https://doi.org/10.1186/s12884-022-04519-6

Schmidt, L., Sobotka, T., Bentzen, J. G., & Nyboe Andersen, A. (2017). Demographic and medical consequences of the postponement of parenthood. *Human Reproduction Update*, 18(1), 29–43. https://doi.org/10.1093/humupd/dmr040

The American College of Obstetricians and Gynecologists. (2022). Celiac disease and reproductive disorders: Meta-analysis of epidemiologic associations and potential pathogenic mechanisms. *Human Reproduction Update*, 20(4), 582–593. https://doi.org/10.1093/humupd/dmu007

World Health Organization. (2014). Preterm birth: Fact sheet N°363. https://www.who.int/news-room/fact-sheets/detail/preterm-birth

World Health Organization. (2020). Low birth weight: Policy brief. *World Health Organization.* https://www.who.int/publications/i/item/9789240018762

Zhang, C., Yan, L., & Qiao, J. (2022). Effect of advanced parental age on pregnancy outcome and offspring health. *Journal of Assisted Reproduction and Genetics*, 39(9), 1969–1986. https://doi.org/10.1007/s10815-022-02533-w