

Family Socio-economic Factors Associated with Preterm and Fullterm Birth among Mothers in Holy karbala city: A Comparative Study

Bayan Zyad Daher¹, khamess Bander Obaid²

¹ Department of Paediatric Nursing, College of Nursing, University of Kerbala, Iraq.

Email: bayan.z@s.uokerbal.edu.iq

² Department of Paediatric Nursing, College of Nursing, University of Kerbala, Iraq.

Email: khamees.b@uokerbala.edu.iq



Received: 1/ 5 /2025

Accepted: 3/ 6 /2025

Published: 31/ 3 /2026

DOI:

10.65682/kjnhs.v2.i1.49-58

Abstract

Background: One of the most important causes of child death in the world is preterm birth (PTB), especially in developing and low-income countries. Therefore, identifying socioeconomic factors may contribute to supporting targeted measures to reduce its incidence.

Objective: To determine the relationship between family socioeconomic factors, preterm and full-term birth among mothers in Holy Karbala city, Iraq.

Methods: A quantitative (comparative) analytical study was conducted in three hospitals in the Holy city Karbala, Iraq, during the period from September 19, 2024, and July 9, 2025. The study sample included 150 mothers who had preterm births and 150 mothers who had full-term births. individuals were selected via non-probability convenience sampling., data were collected through face-to-face interviews with mothers using a standardized questionnaire that covered sociodemographic and health-related variables. Binary logistic regression and chi-square tests were used to analyse the data.

Results: Various socioeconomic factors, including: mother age ($p=0.035$), living in rural region ($p=0.004$), having a low level of education ($p=0.000$), and having an insufficient monthly income ($p=0.014$), were significantly correlated with PTB.

Conclusion: PTB risk in Holy Karbala strongly correlates with family socioeconomic conditions especially low mother education, insufficient income, and rural residence. In similar populations, the burden of PTB may be minimized by efforts that improve maternal awareness and access to antenatal care services.

Keywords: Holy Karbala City, Preterm Birth, Maternal Education, Socioeconomic Factors, A Comparative Study, Full-term Birth.



1. Introduction

The World Health Organization (WHO) defines Preterm birth (PTB) as the birth of a newborn before 37 full weeks of gestation. Based on the mother's gestational age, it was separated into three categories: extremely preterm (<28 weeks), very preterm (28–<32 weeks), and moderate or late preterm (32–<37) weeks of gestation (Shekho & Yalda, 2022). PTB is a major worldwide contributor to a newborn morbidity and mortality. PTB are estimated to contribute to 15 million newborn yearly, approximately 11% of the total live births globally. The WHO estimates that in 2019 complications from preterm birth responsible for around 18% of deaths for newborns under five and 35% of neonatal deaths (World Health Organization, 2023; Liu et al., 2016). PTB is recognized as a significant cause of morbidity and mortality in Iraq and has been on increase for years (Goldenberg et al., 2008; Saigal & Doyle, 2008). Increasingly, low- and middle-income countries are experiencing preterm births especially in sub-Saharan Africa and South Asia, which collectively represent approximately 85% of all Preterm birth throughout the world. Health facilities are generally inadequate, and maternal health access early pregnancy interventions are limited in these areas (Lawn et al., 2010; Hack et al., 2002).

Significant lower gestational increase the likelihood of preterm birth, especially its concomitant economic expense, morbidity, and mortality. Even for those preterm neonates who do survive, there is usually a heightened likelihood of both immediate and future health problems (Goldenberg et al., 2008; Alsaltani & Alkemawy, 2021). Preterm birth incidence has been often seen to be strongly determined by socioeconomic aspects, especially maternal education, family earnings, and residence (Salama et al., 2021). Preterm deliveries have become increasingly Widespread over the past several years in Iraq, possibly due to increasing poverty, poor health care systems, and restricted access to quality antenatal care (Al-Dabbagh & Al-Tae, 2006). Additionally, A longitudinal cohort study in the US showed a strong association between preterm birth and psychosocial stress, economic issues, and inadequate prenatal care (Laraia et al., 2010). With optimal care as well as appropriate care for an ill and tiny infant in a high-standard intensive care unit, virtually 1.5 million neonatal deaths can be prevented by 2030 as per a WHO report in 2019 (Salama et al., 2021; WHO and UNICEF, 2021). The results can also direct particular interventions for increasing maternal-infant health and reducing the likelihood of preterm birth in similar settings. Localized studies are necessary in Iraq in order to learn about the impact of family socioeconomic status on pregnancy (Shekho & Yalda, 2022; Mohammed et al., 2022).

2. Methods

2.1 Objective of the Study

1. To identify family socio-economic variables related to being born preterm in Holy karbala vieux.
2. To determine the association between maternal sociodemographic factors and preterm objective of the study.

Methodology

2.2 Study Design and Participants

Comparative quantitative analytical study was carried out from 19th September 2024 through 9th July 2025 to identify socioeconomic factors having an influence on preterm birth in the holy city of Karbala. To to guarantee an accurate sample size for the study population, a restricted sample of the population was taken based on preterm birth rates during the previous three months of September, October, and November from there are three hospitals in Karbala holy city (Sayyida Khadija Al-Kubra Teaching Hospital, Obstetrics and Gynecology Teaching Hospital, and Karbala Children's Teaching Hospital). These hospitals were randomly selected for participation in the study. To determine an approximate mean for preterm birth, the number of the number of preterm babies in the last three months was divided by 3. The same number of full-term newborns were added for comparison purposes, resulting in 10% of total numbers of preterm newborns. Information was

gathered from December 2, 2024 through February 15, 2025 from the three aforementioned hospitals in Karbala city, based on direct interviews conducted in participation with involved mothers a questionnaire. Before being used, the study tool was examined by a group of 11 academic specialists in order to ensure that it was face-valid and had accurate information. On the basis of recommendations were incorporated and the necessary alterations made. The scientific community in the University of Kerbala College of Nursing received research proposal and data collection tools, and official permission was given to conduct the study.

2.3 Data Collection Instruments

The researcher uses an instrument consist two parts:

1. Socio demographic data of mother: (age, place of residence, educational level, occupation, monthly income).
2. Fetal characteristics of the newborn: (gestational age, weight, birth outcome, presence of congenital malformations, fetal condition before birth).

2.4 Pilot Study

A pilot study was conducted on 36 mothers from a similar population,(18 preterm births and 18 fullterm births), who were not included in the main sample, to test the questionnaire's clarity, effectiveness, and applicability. The results of the pilot study indicated that the instrument was clear, understandable, and effective, and therefore required no modifications.

2.5 Ethical Considerations

Initially, an official request was submitted to the concerned authority in order to start this study, and then the ethics committee at the Faculty of Nursing was presented with the objectives, title and questionnaire and agreed to conduct the study, and Karbala University in turn submitted an official request to the Karbala Health Department to facilitate the task of data collection, in addition to that, the Karbala Health Department (Training and Development Department) assigned the researcher to fill out the ministerial form containing information related to the study, after that he sent a consent form to the Faculty of Nursing and the Training and development department. Development assigned the researcher to fill out the ministerial form containing information related to the study, and then sent an approval form to the College of Nursing and the Training and Development Department in each of the three hospitals (Karbala Teaching Hospital for Children, Obstetrics and Gynecology Teaching Hospital and Sayyida Khadija Al-Kubra Teaching Hospital), which in turn sent the approval to the relevant departments in these hospitals, which facilitated the researcher's task of interviewing mothers and collecting data.

2.6 Statistical Analysis

Collected data were interned into MS Excel database and later transferred to the SPSS software (SPSS V-19) and missed and error questionnaire were rectified. The descriptive statistics was carried out to know the basic characteristic of the respondents, which is presented as frequency, percentage, mean and standard deviation and score level of knowledge of the respondents.

3. Results

In this study, according to Table (1) shows the distribution of participating mothers according to their socio-demographic data, showing that the highest percentage of participating mothers are from the city (Mothers of Preterm birth= 68%, Mothers Of Full-term berth= 70%), and that the age of the highest percentage of them is less than 25 years (Mothers of Preterm birth= 72.7%, Mothers Of Full-term berth= 76%), and they are housewives (Mothers of Preterm birth= 83.3%, Mothers Of Full-term berth= 82%), and it also shows that their monthly income is barely enough (Mothers of

Preterm birth= 49.3%), and in the group of mothers with timely delivery, it showed that their monthly income is enough by (Mothers Of Full-term berth= 51.4%).

The table also shows that there is a significant statistical significance ($p < 0.05$) for the difference in educational level ($p = 0.000$) between the two study groups, while there was no significant statistical significance for the difference between the other demographic characteristics. Table (2) shows the distribution of mothers according to their answers about the fetal characteristics of the child. It appears that the highest percentage of them had a gestational age of births between (34-36 weeks) in (Mothers of Preterm birth=55.3%), the table also shows that the highest percentage of births in (Mothers of Preterm birth=47.3%) had weights (1.5-<2.5kg), while the weights of the highest percentage of births in (Mothers of Full-term berth= 93.3%) were (>2.5kg). The table also shows that the vast majority of newborns did not have congenital malformations (Mothers of Preterm birth=90.7%, Mothers of Full-term berth= 99.3%), and that the majority of births (single) in the two groups (Mothers of Preterm birth=86%, Mothers of Full-term berth= 96.7%), and alive ((Mothers of Preterm birth=95.3%, Mothers of Full-term berth= 99.3%). The table also shows that there is a significant statistical significance ($p < 0.05$) for the difference in Birth weight ($p = 0.007$), while there was no significant statistical significance for the difference between the other characteristics. Table (3) shows the differences in mother with preterm birth according to their demographic data, it shows that there are statistically significant differences in the rate of preterm births attributed to the mother's age in favor of mothers with a higher means ($p = 0.035$). also show that there are statistically significant differences in the rate of preterm births attributed to the mother's monthly income age in favor of mothers with a higher means ($p = 0.014$). also show that there are statistically significant differences in the rate of preterm births attributed to Place of residence in favor of mothers with a higher means ($p = 0.004$). In contrast, there were no statistically significant differences in the rate of preterm births attributed to any of other sociodemographic data. The table (4) shows that one of the risk factors identified by linear regression analysis is maternal age. The older the mother, the greater the likelihood of preterm birth ($p = 0.002$). The linear regression of risk factors also shows that place of residence is a risk factor for preterm birth, with mothers living in rural areas being more likely to give birth preterm than mothers living in cities($p = 0.004^*$). The table also shows that increased birth weight is a risk factor for preterm birth. ($p = 0.000^*$). that is, the higher the birth weight, the greater the chance of preterm birth.

Table 1: distribution of participating mothers according to their socio-demographic data

Socio-demographic Data		Mothers of Preterm birth		Mothers Of Full-term berth		X2	P-value
		N	%	N	%		
Place of residence	City	102	68	105	70	0.286	0.593
	Rural	48	32	45	30		
Mothers age (years)	<25 years	109	72.7	114	76	3.475	0.468
	25-35 years	24	16	24	16		
	>35years	17	11.3	12	8		
Educational level	Illiterate	14	9.3	7	4.7	21.532	0.000**
	Reads and writes	18	12	8	5.3		
	Primary	40	26.7	37	24.7		
	Intermediate	33	22	39	26		
	Secondary	8	5.3	12	8		
	Institute	5	3.3	8	5.3		
	University	32	21.3	38	25.3		

Mothers occupation	Master's/PhD	0	0	1	0.7	4.504	0.337
	Employed	22	14.7	23	15.3		
	Housewife	125	83.3	123	82		
	Freelance	3	2	4	2.7		
monthly income	Enough	41	27.4	77	51.4	4.330	0.361
	Not enough	35	23.3	17	11.3		
	Barely enough	74	49.3	56	37.3		

X^2 :chi square *: p value ≤ 0.05 **: p value ≤ 0.01

Table (2) Distribution of mothers according to their answers about the fetal characteristics of the child.

fetal characteristics of the child		Mothers of Preterm birth		Mothers Of Full-term berth		X2	P-value
		N	%	N	%		
Gestational (weeks)	age	<28	13	8.7	0	0	-
	28-31	29	19.3	0	0		
	32-33	25	16.7	0	0		
	34-36	83	55.3	0	0		
	>37	0	0	150	100		
Birth weight (kg)		<1 kg	15	10	0	0	10.062
		1-<1.5kg	33	22	0	0	
		1.5-<2.5g	71	47.3	10	6.7	
Presence of congenital abnormalities	Yes	14	9.3	1	0.7	4.036	0.900
	no	136	90.7	149	99.3		
Birth outcome	Single	129	86	145	96.7	0.842	0.359
	Twin	21	14	5	3.3		
Fetal status before birth	Alive	143	95.3	149	99.3	0.049	0.824
	deceased	7	4.7	1	0.3		

X^2 :chi square *: p value ≤ 0.05 **: p value ≤ 0.01

Table 3 : Relationship between maternal sociodemographic characteristics and preterm birth

demographic data		N	Mean M	Standard deviation SD	T/F	P. Value
Place of residence	City	102	3.07	1.055	T	0.004**
	Rural	48	3.43	0.950	6.123	
Mothers age	<25 years	109	3.15	1.044	F	0.035*
	25-35 years	24	2.96	1.122		
	>35years	17	3.76	0.562		
educational level	Illiterate	14	3.07	0.997	F	0.893
	Reads and writes	18	3.17	0.924		
	Primary	40	3.33	0.944		
	Intermediate	33	3.27	0.911		

Mothers occupation	. Secondary	8	2.88	1.553	F	0.322
	Institute	5	3.20	0.837		
	University	32	3.06	1.243		
	Master's/PhD	0	-	-		
	Employed	22	3.05	1.253		
monthly income	Unemployed	125	3.19	0.998	F	0.014*
	Freelance	3	4.00	0.000		
	Enough	41	3.12	1.144		
	Not enough	35	2.80	1.023		
	Barely enough	74	3.41	0.920	4.388	

χ^2 :chi square *: p value ≤ 0.05 **: p value ≤ 0.01

Table (4): Logistic regression of risk factors affecting

Variables	B	SE	Wald	p. value	95% CI for OR	
					Lower	Upper
Mothers age	0.220	0.808	6.741	0.002*	1.011	3.662
Birth weight (kg)	0.856	0.613	14.221	0.000*	2.130	9.340
Place of residence	0.453	0.986	7.654	0.004*	3.022	6.887

SE: Standard Error; CI: Confidence interval; OR: oddsratio.*: Statistically significant.

4. Discussion

The sociodemographic characteristics of the participating mothers in this study are shown in Table (1), which varies mothers who had birth at term with those who had birth preterm. Due to the results, there was actually no statistically significant difference in the proportion of mothers who resided in cities across the preterm (68%) and term (70%) groups ($P = 0.593$). This is in agreement with a study conducted in Baghdad by Al-Azzawi et al. (2023), which also found no association between the type of residence and the risk of preterm birth. With little variation ($P = 0.468$), the study discovered that the majority of mothers in both groups were under 25 (72.7% in the preterm group and 76% in the term group). This is contrary to findings in a study conducted by Mohd et al. (2020) in India and a study by Khoshnaw et al. (2006) in Mosul. The incidence of PTB was shown to be highly related to level of education ($P = 0.000$). These results are consistent in a variety among studies, one carried out in Erbil by Khalaf et al. (2021), which identified that Those who had only primary or lower levels of education were more likely to PTB. Given that most of the women in both study groups were housewives, the study identified there was no notable association between maternal profession and risk of PTB ($P = 0.337$). This result is consistent with a study by Celik et al. (2022) that was carried out in Turkey. The findings indicated that, although not statistically significant ($P = 0.361$), a larger percentage of mothers in the term birth group (51.4%) than in the preterm group (27.3%) reported having a "sufficient" family income. These results are slightly in line with a research conducted in Egypt by Hassan et al. (2022).

While analysing preterm and full-term births, Table (2) indicates the distribution of mothers according to their replies regarding the fetus's characteristics. In the late preterm gestational age group (34–36 weeks), preterm births represented 55.3% of all preterm births, with births at 28–31 weeks placed third at 19.3%. According to a study by Blencowe et al., more than half of preterm births occurs between weeks 34 and 36 of gestation, which is in line with these results (Blencowe et al., 2012). Additionally, Overall preterm newborns weighed less than 2.5 kg, and there was a statistically significant difference between the two groups ($p=0.007$). About 6.7% of full-term newborn weighed approximately 1.5 to 2.5 kg, compared to 47.3% of these. These results agree with those of Goldenberg et al. (2008) who confirmed the strong link between low birth weight and preterm birth, which raises the newborn's risk of morbidity and death [4]. There was no statistically significant difference between both groups, despite the low rate of congenital anomalies ($p=0.900$). This result is in disagreement to the findings of study by Boyle et al. (Boyle et al., 2018). Furthermore, the rate of multiple births was higher in preterm births (14%) rather than full-term births (3.3%), however no

significant difference was found ($p=0.359$). This corresponds to the research conducted by Martin et al. (2016). The rate of fetal mortality was higher in preterm births (4.7%) compared to full-term births (0.3%), although no significant difference was seen ($p=0.824$). This outcome agrees with other investigations, including one conducted by (Liu et al., 2016).

The results of the study on socioeconomic factors associated with preterm birth in Holy karbala city are shown in Table (3), which indicates statistical differences in the preterm birth rates according to a variety of maternal demographic categories. Mother's age ($p=0.035$), and monthly ($p=0.014$), residence locality ($p=0.004$) all had statistically significant differences and no statistically significant differences among other sociodemographic variables were identified. According to the results, older mothers are more likely to give birth before their due date. This is in agreement compared with other studies that reported an increased likelihood of preterm birth in older women (Walker et al., 2017). The research findings show a statistically significant relationship between the rate for preterm birth and maternal monthly earnings. This is in agreement with various studies, such as Bloom (2018), which proved that low-income women are more likely to have a preterm birth scheduled time. Preterm birth were more prevalent in those who lived in cities.

A number of studies, including Choudhury S.S. (2020), substantiate this finding. Nevertheless Research has shown that the style of practice in the region can influence the association Between residential location and preterm birth (Mahmoud K., 2017). A linear regression analysis in Table (4) revealed a statistically significant association between maternal age and risk of preterm birth, with increased risk of preterm birth occurring as maternal age increases ($p=0.002$). A study by Ali et al. in Iraq indicated that women over 35 had a higher risk of preterm birth than women in younger age groups (Ali et al., 2012), which is in agreement with this result. An similar result was found in a Pakistani study (Javed et al., 2014). Mothers who resided in rural regions had a higher chance of giving birth newborn before their due dates than mothers who resided in cities, according to the results ($p=0.004$).

A research carried out in Nigeria, revealed this association (Adekanle et al., 2008). Surprisingly, Increased birth weights were linked with increased preterm birth risk, as shown in the analysis which identified that increased birth weight was a risk factor for preterm birth ($p=0.000$). The finding goes counter to the majority of literature being published nowadays, which tends to show that low birth weight is strongly linked to preterm birth rather than the reverse. A study by Goldenberg et al. (2008) for example, found that low birth weight is often the product of preterm birth rather than its cause. Thus, its inverse relationship needs to be explored in depth since may reflect the presence of confounding variables or errors in documentation or measurement.

5. Conclusion

This research has shown that a range of social and demographic features, particularly low family income, rural residing, and maternal old age, are associated with preterm birth. Additionally, A relationship between birth weight and preterm birth was found. With these findings in mind, it is recommended that maternal care should be improved in rural and poor areas, and educational programs should be developed in order to reduce the risk of preterm birth. More research should be promoted in an attempt to fully comprehend the relationship between birth weight and preterm birth.

6. Recommendations

Based on the findings of the study, some recommendations can be formulated:

1. Using targeted education and services, develop programs and projects to aid low-income and those from poorly educated families in an attempt to reduce the risk of preterm birth.
2. Promote frequent prenatal check-ups and enhance women's access to maternal care in rural areas especially for those who are socioeconomically underprivileged.

3. Promote increased use of longitudinal methods and random sample methodology to validate findings from the present research and achieve improved awareness of causality.
4. Throughout prenatal visits, train healthcare providers to recognize and handle socioeconomic risk factors so that early intervention can avoid preterm birth.

7. Acknowledgments

I would like to extend my sincere thanks and gratitude to everyone who contributed to the success of this study, including my academic supervisor, the presidency of the University of Karbala, the faculty members of the College of Nursing, and the mothers who participated in the study. Finally, I would like to express my gratitude to my friends and family for their continuous support and generous prayers, which motivated me throughout the research.

8. Abbreviations

Preterm birth: PTB

World health organization: WHO

Statistical package of social sciences: SPSS

9. Authors' Contributions

Each author contributed an equally significant contribution to the design of the work, the collection, analysis, and interpretation of the data, as well as to the critical drafting or revision of the work for significant intellectual material. The final paper was read and approved by all authors, who also accept responsibility for the accuracy of the data analysis and the data integrity.

10. Funding

None.

11. Role Of the Funding Source

None.

12. Availability Of Data and Materials

The data used in this study are available from the corresponding author on request.

13. Ethics Approval and Consent to Participate

The Declaration of Helsinki was followed when conducting the study. On October 27, 2024, the University of Kerbala's College of Nursing Ethics Committee accepted this study under approval number Uok.con.24.046. A legal document requesting permission from the University of Kerbala's College of Nursing to gather data, addressed to the Holy karbala Province's Directorate General of Education. All participants signed an informed consent form.

14. Consent For Publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

15. References

- Adekanle, D. A., Adeyemi, A. S., & Fadero, F. F. (2008). Gestational age at booking for antenatal care in a tertiary health facility in Nigeria. *Nigerian Journal of Clinical Practice*, *11*(3), 276–279.
- Al-Azzawi, A. A., Jasim, H. A., & Mahmood, S. A. (2023). Preterm birth and associated factors

among women attending hospitals in Baghdad. *Iraqi Academic Scientific Journal*.

- Al-Dabbagh, S. A., & Al-Taee, W. Y. (2006). Risk factors for preterm birth in Mosul: a comparative study. *Eastern Mediterranean Health Journal*, 12(Supplement 2), S17--S24.
- Ali, A. A., Okud, A., Khojali, A., & Adam, G. K. (2012). Preterm birth in Kassala, eastern Sudan. *BMC Pregnancy and Childbirth*, 12, 94. <https://doi.org/10.1186/1471-2393-12-94>
- Alsaltani, S. N. H., & Alkemawy, S. N. Y. (2021). Maternal comorbidities associated with preterm deliveries in comparison with full term delivery in Al-Zahraa Teaching Hospital in Al Najaf City. *Indian Journal of Forensic Medicine & Toxicology*, 15(1), 1567–1573.
- Blencowe, H., Cousens, S., & Oestergaard M.Z., et al. (2012). National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications. *The Lancet*, 379(9832), 2162–2172.
- Bloom, S. (2018). Socioeconomic factors and preterm birth: A global perspective. *BMC Pregnancy and Childbirth*, 18(1), 145.
- Boyle, B., McConkey, R., & Garne E., et al. (2018). Trends in prevalence and survival of children with congenital anomalies in Europe, 1980–2012. *BMJ*, 361, k2949.
- Celik, M., Ozturk, R., Gunes, H., & Yilmaz, E. (2022). Impact of maternal employment on preterm birth risk in Turkey. *Journal of Maternal-Fetal & Neonatal Medicine*, 35(25), 4942–4947. <https://doi.org/10.1080/14767058.2022.2107981>
- Choudhury S.S., et al. (2020). Urbanization and its impact on maternal health outcomes. *Environmental Health Perspectives*, 128(3), 37004.
- Goldenberg, R. L., Culhane, J. F., Iams, J. D., & Romero, R. (2008). Epidemiology and causes of preterm birth. *The Lancet*, 371(9606), 75–84. [https://doi.org/10.1016/S0140-6736\(08\)60074-4](https://doi.org/10.1016/S0140-6736(08)60074-4)
- Hack, M., Flannery, D. J., Schluchter, M., Cartar, L., Borawski, E., & Klein, N. (2002). Outcomes in young adulthood for very-low-birth-weight infants. *New England Journal of Medicine*, 346(3), 149–157.
- Hassan, M. H., Fattah, M. R. A., & Salem, M. N. (2022). Socioeconomic determinants of preterm birth in a rural Egyptian setting. *BMC Pregnancy and Childbirth*, 22(1), 557. <https://doi.org/10.1186/s12884-022-04901-9>
- Javed, I., Shoaib, T., Ali, M. A., & Khushdil, A. (2014). Maternal risk factors associated with preterm birth in Pakistan: a comparative study. *Journal of the Pakistan Medical Association (JPMA)*, 64(7), 785–789.
- Khalaf, K. M., Ahmed, S. M., & Hassan, A. A. (2021). Sociodemographic factors and their association with preterm birth in Erbil, Iraq. *Medical Journal of Newbornlon*, 18(1), 10–15. https://doi.org/10.4103/MJBL.MJBL_68_20
- Khoshnaw, H., Al-Alaf, S. K., & Al-Tawil, N. G. (2006). Preterm delivery in Erbil city: risk factors. *BMC Pregnancy and Childbirth*, 6, 13. <https://doi.org/10.1186/1471-2393-6-13>
- Laraia, B. A., Siega-Riz, A. M., & Gundersen, C. (2010). Household food insecurity is associated with self-reported pregravid weight status, gestational weight gain, and pregnancy complications. *Journal of the American Dietetic Association*, 110(5), 692–701.
- Lawn, J. E., Gravett, M. G., Nunes, T. M., Rubens, C. E., & Stanton, C. (2010). Global report on preterm birth and stillbirth (1 of 7): definitions, description of the burden and opportunities to improve data. *BMC Pregnancy and Childbirth*, 10(S1), S1.

- Liu, L., Oza, S., Hogan, D., Chu, Y., Perin, J., & Zhu J., et al. (2016). Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the Sustainable Development Goals. *The Lancet*, 388(10063), 3027–3035.
- Mahmoud K., et al. (2017). The role of healthcare accessibility in preterm birth. *Health Policy and Planning*, 32(2), 147–153.
- Martin, J. A., Hamilton, B. E., & Osterman, M. J. (2016). Births in the United States, 2015. *NCHS Data Brief*, 258, 1–8.
- Mohammed, I. S., Obaid, A. R., & Majeed, B. A. (2022). Maternal risk factors and outcomes of preterm neonates admitted to the neonatal care unit in Al-Elwiya Pediatric Teaching Hospital in Baghdad, Iraq. *Iranian Journal of Neonatology*, 13(3). <https://doi.org/10.22038/IJN.2022.61680.2176>
- Mohd, S., Kumar, P., Singh, J. V., & Srivastava, J. P. (2020). Maternal risk factors associated with preterm birth: a comparative study. *BMC Pregnancy and Childbirth*, 20(1), 1–8. <https://doi.org/10.1186/s12884-020-03174-1>
- Saigal, S., & Doyle, L. W. (2008). An overview of mortality and sequelae of preterm birth from infancy to adulthood. *The Lancet*, 371(9608), 261–269.
- Salama, E. E. I. A. S., Salama, H. S., & Alobaidly, S. H. (2021). Socioeconomic risk factors for preterm birth in the state of Qatar: A population-based study. *Acta Biomedica*, 92(3), e2021186. <https://doi.org/10.23750/abm.v92i3.11290>
- Shekho, A. H., & Yalda, M. A. (2022). Preterm delivery: associated risk factors and neonatal outcomes in Duhok Hospital for Obstetrics and Gynecology. *Journal of Duhok University*, 25(2), 97–104. <https://doi.org/10.26682/sjuod.2022.25.2.9>
- Walker, M., McDonald, H., & Lee, K. (2017). Age and pregnancy outcomes. *Journal of Obstetrics and Gynaecology*, 37(2), 183–190.
- WHO and UNICEF. (2021). *Survive and Thrive: 2019 report*.
- World Health Organization (WHO). (2023). *Preterm birth*.