

# The predictive impact of socioeconomic status on the pattern of reproductive health in 35-70-year-old women in Ardabil: A Persian cohort study

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## Research Article

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# Abstract

## Background

Women often have many reproductive health problems in developing countries. Economic and social factors play an important role in health outcomes. The purpose of this study was to determine the predictive impact of socioeconomic status on reproductive health in Ardabil women aged 35 to 70.

## Method

A cross-sectional study was performed on the population of women aged 35 to 70 years who participated in the Ardabil Persian cohort study. Out of 9,000 eligible populations, 368 participants were randomly included in the study. A checklist was used to collect all patient information from the Ardabil Persian Cohort Center. Data analysis was performed using descriptive statistics, logistic regression and multivariate regression analysis.

## Results

The results showed that there was a significant statistical relationship between socioeconomic status and women reproductive health ( $p < 0.001$ ). Women with greater socioeconomic status had fewer reproductive health issues, such as infertility, tubectomy, abortion, stillbirth, atypical menopause, and hysterectomy.

## Conclusions

The findings of the study indicated the relationship between socioeconomic status and women reproductive health. It should promote the health of women through fostering cross-sectoral collaboration and implementing government policies to empower and improve women's socioeconomic status.

## Plain English Summary

Economic and social factors play an important role in health outcomes in women. The purpose of this study was to determine the predictive impact of socioeconomic status on women reproductive health in Ardabil. 368 women aged 35 to 70 years were randomly included in a cross-sectional study. Data were collected by a checklist. The findings of the study indicated the significant relationship between socioeconomic status and women reproductive health. It should promote the health of women through fostering cross-sectoral collaboration and implementing government policies to empower and improve women's socioeconomic status.

## Background

One of the most crucial phases in maintaining community health is promoting reproductive health and addressing its other dimensions at the national and international levels. Reproductive health is defined as all the important stages in the health insurance of family members, particularly women and girls, from birth to death [1]. Women's health, on the other hand, is significantly influenced by their socioeconomic status [2].

Reproductive health programs have a direct impact on decreasing child and maternal death rates, preventing severe and expensive diseases, enhancing quality of life, and increasing functional life expectancy. According to the Action Plan and Document of the International Conference on Population and Development in Cairo in 1994, it is described as "full physical, mental, and social well-being, which incorporates all parts of the reproductive system, its process, and function." It implies that people can choose how, when, how frequently, and when to have children. As a consequence, there is no conflict between awareness and access to secure, efficient, cost-effective, and acceptable family planning as well as the right to health care that would allow women to experience pregnancy and delivery safely. Social changes, technological developments, and people's knowledge and awareness have improved women's reproductive health in developed countries in recent decades, but there are still many challenges in the field of reproductive health in underdeveloped countries owing to women's lack of awareness [1, 3].

According to several studies, one of the biggest impediments to the adoption of contraceptive methods is poor socioeconomic status, and it is critical to consider women's financial stability while developing suggestions for how to counsel on contraceptive methods [4]. Menstrual disorders, which are among the most common illnesses in adult women, appear to be related to socioeconomic status, specifically education and family income [2]. Menstrual issues are more common among working women, maids, and salesmen [5].

Women with low socioeconomic status, on the other hand, do not have favorable nutritional status, highlighting the importance of socioeconomic status in personal health [6].

Education reassures women about the human reproductive system and raises their awareness of contraception, caring behaviors at various stages of pregnancy, such as prenatal, postpartum, and postnatal periods, the interval between births, and newborn care [7].

A person with a low socioeconomic status will have poorer health. Howe et al., who consider that social and economic inequality has a detrimental influence on physical health, are among those who have contributed to this effort [8]. One study identified socioeconomic status as one of the causes of common mental problems in women [9].

Women have been victims all across the world, not just of social rights, but also of unequal opportunities [10]. Long-term social and economic factors have an impact on both physical and mental health [11].

According to the findings of Pourmohsen et al. (1398), at the Gilan University of Medical Sciences, there was a substantial correlation between social inequality and the economic health of employing women,

and social and economic disparity predicted 13% of employing women's health [12]. In reality, there is a relationship between economic disparities and health and social problems, and people with higher incomes practice better [13].

According to Khavari et al. (2013), there is a significant relationship between all aspects of a sense of inequity and the mental health of social security workers, and the two social and economic components together explain around 13% of the mental health of women working in social security [14].

There has been little research that directly investigates the relationship between socioeconomic status and reproductive health in women, and no such study has been conducted in Iran thus far. As a result, the goal of this study was to determine the predictive influence of socioeconomic status on reproductive health in Ardabil women aged 35 to 70, in order to provide policymakers with unequivocal data to improve women's reproductive health.

## Methods

A cross-sectional study was conducted on the Ardabil Persian cohort study population of women aged 35 to 70 years. The sample was selected at random. The sample size was calculated using Cochran's method with a 0.05 error rate and a population of 9,000 people, and 368 women were included in the study. All information (types of cancer, housing, number of bedrooms, family assets, domestic and foreign travel, number of books read, income, employment, education) was collected from the Ardabil Persian Cohort study using a checklist based on the study's objectives.

Finally, all of the data was entered and analyzed using SPSS software version 21. The distribution of the variables under study was approximated using dispersion statistics, and logistic regression and multivariate regression tests were performed on the analytical data.

The information gathered was kept totally secret, and all ethical standards were observed in its use. The ethics committee at Ardabil University of Medical Sciences approved the study (Code: IR.ARUMS.REC.1399.186).

## Results

The mean age of the women was  $56.47 \pm 0.65$  years. According to the findings of this survey, 86.7% were married, 44% were illiterate, 80.4% were housewives, and 57.3% were obese. Furthermore, 6% had a hysterectomy, 28.8% had a tubectomy, 6.1% had a stillbirth, 39.8% had a mammography history, 73.1% had a history of breast and cervical cancer screening, 40.1% had a breast checkup, and 86.6% had a Pap smear test (Table 1).

Table 1  
Demographic characteristics and history of reproductive health interventions of women in the study

<b>women</b>		
	Frequency	Percent
<b>Age Categories</b>		
<b>35–39</b>	81	22.0
40–44	53	14.4
45–49	70	19.0
50–54	65	17.7
55–59	48	13.0
60–64	36	9.8
<b>65–70</b>	15	4.1
<b>Marital Status</b>		
Single	3	0.8
Married	319	86.7
divorced	35	9.5
Other	11	3.0
<b>Education</b>		
Illiterate	162	44.0
Primary	85	23.1
High school	38	10.3
Diploma	50	13.6
Academic	33	8.97
<b>Chronic Disease</b>		
Diabetes	341	10.9
Hypertension	504	16.1
Cardiac Ischemic	348	11.1
<b>Occupation</b>		
Unemployed/Housewife	296	80.4

	<b>women</b>	
Official employee	6	1.7
Teacher / Professor	16	4.3
Manual worker	5	1.4
Self-employed	39	10.60
Medical Staff	6	1.6
BMI Categorized		
Underweight	6	1.6
Normal weight	34	9.2
Overweight	117	31.8
Obesity	211	57.3
Stillbirth		
No	339	93.9
Yes	22	6.1
Tubectomy		
No	262	71.2
Yes	106	28.8
Hysterectomy		
No	346	94.0
Yes	22	6.0
Normal Menopause		
No	59	16.1
Yes	309	83.9
Hormonal Replacement Drug		
No	3	0.8
Yes	365	99.2
Cervical or Breast Cancer Screening		
Yes	269	73.1
No	99	26.9

<b>women</b>		
Breast Exam		
Yes	148	40.1
No	220	59.9
Mammography		
Yes	146	39.8
No	222	60.2
Pap Smear		
Yes	319	86.6
No	49	13.4

In terms of different reproductive health parameters, the graph 1 indicates the percentage of women participating in the research at five socioeconomic levels. The findings show that the higher a woman's socioeconomic level, the fewer reproductive health problems she experiences, such as infertility, tubectomy, abortion, stillbirth, atypical menopause, and hysterectomy. For example, the abortion rate among the poorest women was more than 40%, but it was less than 30% among wealthy women.

Table 2 lists the factors that lead to poor reproductive health in women. Women were divided into two groups based on their reproductive status and history: those with good reproductive health and those with poor reproductive health. Women with a history of hysterectomy, miscarriage, more than one abortion, or use of fertility medicines were defined as having poor reproductive health, whereas women who did not have any of the aforementioned were classed as having good reproductive health. The table below examines the probability of women having poor reproductive health in terms of socio-economic status. The findings reveal, for example, that the chances of poor reproductive health increased with age, or that the risks of poor reproductive health were higher in illiterate people than in educated people, and that the chances of normal reproductive health improved with rising levels of education. The study's most notable conclusion was the inverse relationship between poor reproductive health chances and women's socioeconomic status, which indicated that the possibilities of poor reproductive health were much lower in rich women than in poor women.

Table 2

logistic regression model for the association between socio-demographic factors and weak reproductive health among the Ardabil women's population

		<b>Odds Ratio</b>			
		Crude (95% CI)	P-value	Adjusted (95% CI)	P-value
<b>Education</b> (ref: Illiterate)	Primary	1.32 (1.19–1.46)	< 0.001	0.81 (0.71–0.91)	0.001
	High school	1.49 (1.33–1.67)	< 0.001	0.73 (0.63–0.84)	< 0.001
	Diploma	0.65 (0.43–0.92)	0.014	0.57 (0.42–0.73)	< 0.001
	Academic degree	0.41 (0.13–0.83)	0.001	0.50 (0.40–0.64)	< 0.001
<b>Marital Status</b> (ref: Single)	Married	2.13 (1.46–3.11)	< 0.001	2.60 (1.51–4.46)	0.001
	Divorced	1.02 (0.35–1.88)	0.112	1.09 (0.44–1.77)	0.124
	Other	0.89 (0.51–1.75)	0.774	1.44 (0.69–2.70)	0.291
<b>Age Categories</b> (ref: 35–39)	40–44	1.04 (0.86–1.56)	0.102	1.06 (0.87–1.48)	0.220
	45–49	1.21 (0.90–1.85)	0.089	1.36 (0.96–1.79)	0.091
	50–54	1.95 (1.20–2.71)	0.041	1.68 (1.25–1.93)	0.024
	55–59	2.16 (1.89–3.31)	< 0.001	1.85 (1.43–2.82)	< 0.001
	60–64	2.03 (1.67–2.84)	< 0.001	1.98 (1.52–2.20)	< 0.001
	65–70	2.45 (2.02–3.26)	< 0.001	2.14 (1.71–2.84)	< 0.001
<b>BMI Categorized</b> (ref: Normal weight)	Underweight	0.89 (0.53–1.48)	0.663	0.83 (0.48–1.46)	0.532
	Overweight	1.71 (1.13–2.78)	0.004	1.64 (1.15–1.94)	0.005
	Obese	1.67 (1.16–2.25)	< 0.001	1.83 (1.23–2.34)	0.004

		Odds Ratio			
<b>Occupation</b> (ref: Unemployed)	Official employee	0.28 (0.11–1.15)	0.377	0.22 (0.08–1.05)	0.302
	Self-employed	0.60 (0.49–1.05)	0.714	0.58 (0.38–1.13)	0.615
	Retired	1.23 (1.08–1.98)	0.041	1.48 (1.12–2.02)	0.019
<b>Socioeconomic Quintiles (ref:1st quintile Poorest)</b>	2nd quintile	1.01 (0.90–1.14)	0.32	0.97 (0.85–1.10)	0.680
	3rd quintile	0.88 (0.79–0.96)	0.025	0.85 (0.71–0.95)	0.008
	4th quintile	0.72 (0.64–0.82)	< 0.001	0.66 (0.59–0.81)	< 0.001
	5th quintile (highest)	0.71 (0.40–0.84)	< 0.001	0.66 (0.58–0.82)	< 0.001

CI = Confidence Interval; BMI = Body Mass Index; ref = Reference Group; MA = Master of Sciences

## Discussion

The current study looks at the impact of socioeconomic status on the reproductive health of Ardabil women aged 35 to 70. Infertility, tubectomy, abortion, stillbirth, atypical menopause, and hysterectomy were all less prevalent among women with higher socioeconomic status.

Consistent with our findings, Bikash et al. (2020) discovered that women's education had a favorable and highly significant connection with their use of maternity and child health services in India. Similarly, educated women received more prenatal care, delivery care, and postpartum care than illiterate women [15].

Another study on the health conditions of women living in slums, conducted by Kaviarasu et al. (2015), found that the unhygienic environment of slums and the basic facilities of non-standard settlements jeopardize the health and well-being of all inhabitants, particularly women. These women had poor reproductive health as a result of an unhealthy diet, early marriage and childbirth, and inadequate time between pregnancies [16]. This study's findings were congruent with the current study's findings, which indicated that women with poor socioeconomic status had higher rates of infertility, tubectomy, abortion, stillbirth, atypical menopause, and hysterectomy.

Furthermore, Vincent et al. (2021) demonstrated in their qualitative study that socioeconomic status is still one of the most important factors affecting women's reproductive health in Nigeria, where the process of reducing maternal and child mortality is slow and factors such as age, education, material and

human capital, economic-financial inequality, and men's participation in reproductive health activities were deemed effective in the reproductive health of women [17].

Gartner et al. (2021) discovered that the rate of hysterectomy was higher in areas with higher socioeconomic levels, the main cause of which is unknown, but may be due to the higher proportion of blacks in these cities than whites [18]. This outcome contradicts the present inquiry's results. Moreover, the findings of a study conducted in the United States by Bashar et al. (2021) suggest that sterilization methods are lower in women with a university degree, a high income, and who live in cities than in other women [19].

Sharafi et al. (2021) revealed that socioeconomic inequality has a significant impact on most noncommunicable diseases in the region, including infertility and breast cancer, and that these diseases are concentrated among the poorest people, based on data from the Persian Cohort of Hormozgan province [20]. This is consistent with the findings of the current investigation. According to Zhu et al.'s (2021) research on immigrant women, work and money have a significant influence on the menopausal period. Stable employment and a steady income are two benefits that can ease a woman's menopause by reducing financial stress [21]. Poor socioeconomic status, in general, is related to poor health outcomes in women of all ages [22]. Additionally, there is a constant relationship between socioeconomic status and late-life health and death rates. Similarly, higher-earning people are more likely to report excellent health and less depression [23]. Given the aforementioned problems, it is recommended that women be empowered by supporting public policies that protect women in order to reduce the effect of social and economic variables influencing women's health. Economic growth and support for women's investment, as well as the growth of high-wage job opportunities, all contribute to improving conditions for women [24].

## **Limitations**

One drawback of the current study is that the inclusion of disconcerting factors such as motivation and honesty in answering questions hampers the study. Furthermore, some respondents' information was improperly recorded, and the samples were later removed from the research.

## **Conclusion**

The health of women must be prioritized in order to attain the right to health, which is the cornerstone of society's growth and progress. Promoting women's reproductive health necessitates careful planning and preparedness. It is possible to promote the welfare and health of women, families, and society through fostering cross-sectoral collaboration and implementing government policies to empower and improve women's socioeconomic status.

## **Declarations**

## **Acknowledgments**

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## **Authors' contributions**

MA conceived the study. SA drafted the initial manuscript. PF, MA, ZT and ZH had final responsibility to submit for publication. All authors read and amended drafts of the paper and approved the final version.

## **Funding**

This study was approved and funded by Ardabil University of Medical Sciences.

## **Availability of data and materials**

Data for this study were sourced from Ardabil persian cohort study.

The Ethics Committee of Ardabil University of Medical Sciences approved the study (IR.ARUMS.REC.1399.168).

## **Consent for publication**

No consent to publish was needed for this study as we did not use any details and images related to individual participants. In addition, data used is available in the public domain.

## **Ethics and consent to participate**

All respondents provided written consent (fully informed) prior to the study. The information gathered was kept totally secret, and all ethical standards were observed in its use. The ethics committee at Ardabil University of Medical Sciences approved the study (Code: IR.ARUMS.REC.1399.186).

## **Competing interests**

The authors declared that they did not have competing interests.

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## References

1. Shamshiri Milani H. Comprehensive book of public health.1992; Chap. 11, speech 10, Tehran: Arjmand Publications.
2. Kwak Y, Kim Y, Baek KA. Prevalence of irregular menstruation according to socioeconomic status: A population-based nationwide cross-sectional study. PLoS ONE. 2019;14(3):e0214071.
3. UNFPA. Cairo Programme of Action, adopted at the International Conference on Population and Development Cairo, 5– 13 September 1994. [https://www.unfpa.org/sites/default/files/event-pdf/PoA\\_en.pdf](https://www.unfpa.org/sites/default/files/event-pdf/PoA_en.pdf).
4. Arousell J, Carlbom A, Johnsdotter S, Essén B. Are 'low socioeconomic status' and 'religiousness' barriers to minority women's use of contraception? A qualitative exploration and critique of a common argument in reproductive health research. *Midwifery*. 2019;75:59–65.
5. Kwak Y, Kim Y. Irregular menstruation according to occupational status. *Women Health*. 2018;58(10):1135–50.
6. Chandra S, Kaushik N, Gupta N. Study of iron status indicators in different phases of menstrual cycle in females of lower socio-economic group. *Annals of International Medical and Dental Research*. 2017;3(1):1.
7. Barman BSJ, Chouhan P. Impact of education on the utilization of maternal health care services: An investigation from National Family Health Survey (2015–16) in India. *Children and Youth Services Review*. 2020 Jan 1;108:10464.
8. Shifotoka A, Fogarty AW. Is the human sex ratio at birth a sentinel health indicator that is associated with HIV/AIDS and tuberculosis prevalences in the 21st century? *J Epidemiol Community Health*. 2013;67(4):327–31.
9. Shidhaye R, Patel V. Association of socio-economic, gender and health factors with common mental disorders in women: a population-based study of 5703 married rural women in India. *Int J Epidemiol*. 2010;39(6):1510–21.
10. Liu L, MacPhail F, Dong X-y. Gender, work burden, and mental health in post-reform China. *Fem Econ*. 2018;24(2):194–217.

11. Ram Jat T, San Sebastian M. Technical efficiency of public district hospitals in Madhya Pradesh, India: a data envelopment analysis. *Global health action*. 2013;6(1):21742.
12. Pourmohsen M, Khoshravesh V, Masjoudi M, Paksresht S, Khayat S. Investigating the Relationship between Social and Economic Inequality and the Health Status of Employed Women. *J Health*. 2020;11(1):100–8.
13. Rowlingson K. Does income inequality cause health and social problems? London: Joseph Rowntree Foundation; 2011. p. 51.
14. Khavari KSH, Habibpour K, Talebi M. Relationship between dimensions of gender inequality and mental health. *Social Welf Q*. 2013;13(48):111–28.
15. Barman B, Saha J, Chouhan PJC, Review YS. Impact of education on the utilization of maternal health care services: An investigation from National Family Health Survey (2015–16) in India. 2020;108:104642.
16. Kaviarasu SJ, Xavier GJEAR. Status of women's health in urban sub-standard settlements of Chennai, Tamil Nadu state. India. 2015;2(1):14473–83.
17. Vincent AA, Verr JB, Iliya M. The Effect of Selected Socio-Economic Determinants of Health on Maternal/Child Health in Nigeria.
18. Gartner DR, Delamater PL, Hummer RA, Lund JL, Pence BW, Robinson WRJHSR. Patterns of black and white hysterectomy incidence among reproductive aged women. 2021.
19. Beshar I, So J, Chelvakumar M, Cahill EP, Shaw KA, Shaw JGJC. Socioeconomic differences persist in use of permanent vs long-acting reversible contraception: An analysis of the National Survey of Family Growth, 2006 to 2010 vs 2015 to 2017. 2021;103(4):246–54.
20. Sharafi M, Bahramali E, Farjam M, Afrashteh S, Amiri ZJMJoTIRoI. Socioeconomic inequality in noncommunicable diseases: Results from a baseline Persian cohort study. 2021;35(1):605–9.
21. Zou P, Waliwitiya T, Luo Y, Sun W, Shao J, Zhang H, et al. Factors influencing healthy menopause among immigrant women: a scoping review. 2021;21(1):1–11.
22. Rostad B, Deeg DJ, Schei BJEJoA. Socioeconomic inequalities in health in older women. 2009;6(1):39–47.
23. Marmot MJHa. The influence of income on health: views of an epidemiologist. 2002;21(2):31–46.
24. Berik G, Rodgers YvdM. Seguino SJFe. Feminist economics of inequality. *Dev growth*. 2009;15(3):1–33.

## Figures

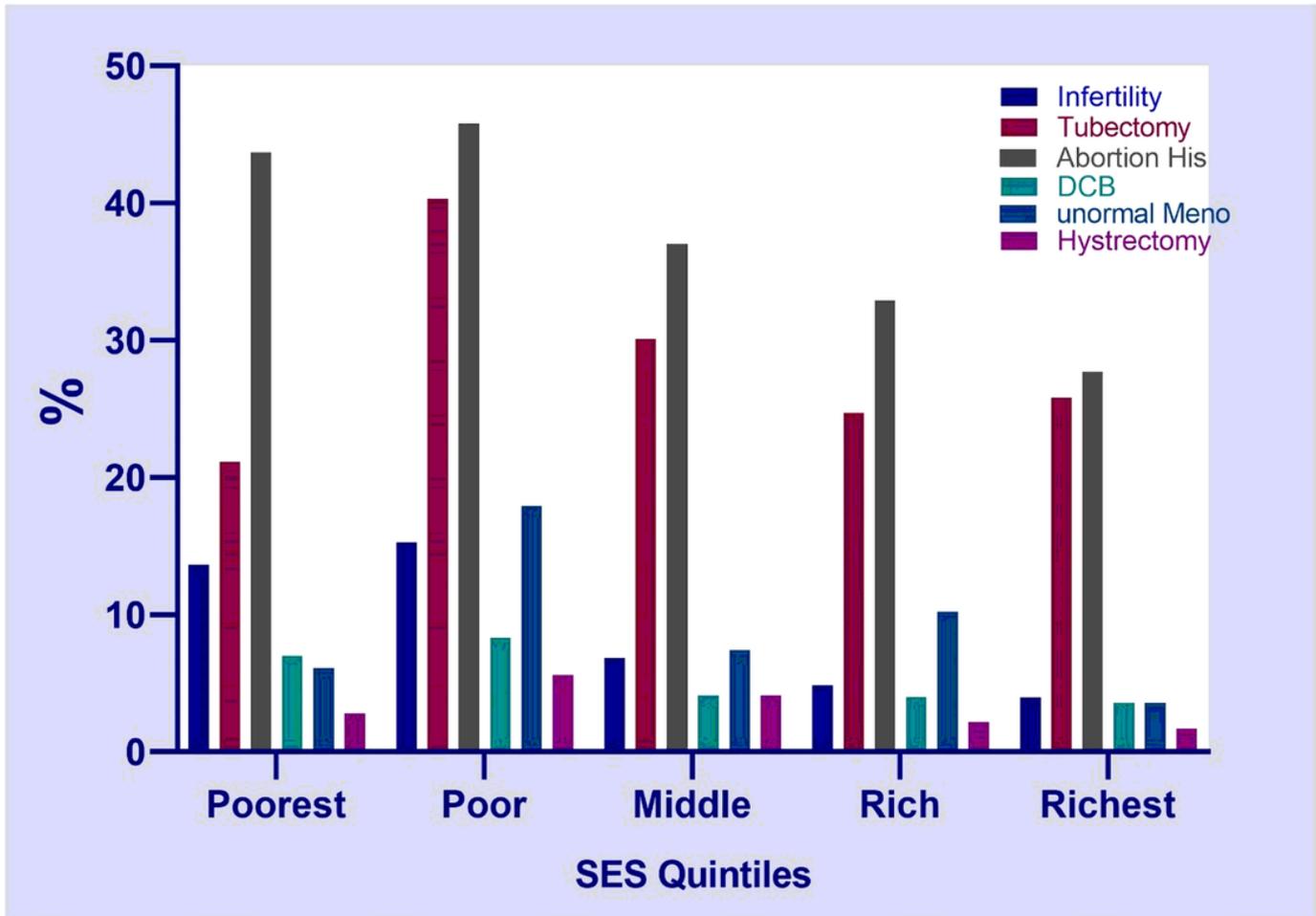


Figure 1

Legend not included with this version.