



# Association Between the Autonomy of Peruvian Women and the Choice of the Place of Delivery: Analysis of a National Survey, 2019

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## Abstract

**Objectives** To determine the association between Peruvian women's autonomy and place of delivery.

**Methods** An analytical cross-sectional study of secondary data from the Demographic and Family Health Survey 2019 was carried out. The dependent variable was institutionalized childbirth, and the independent variable was women's autonomy. Likewise, the association between women's autonomy and institutionalized childbirth was evaluated using Poisson family generalized linear models with logarithmic link function, and crude (PR) and adjusted prevalence ratios (aPR) with their respective 95% confidence interval (CI) were estimated.

**Results** The analysis included 15,334 women aged 15–49 years. It was found that a high proportion of women had a low level of autonomy (42.6%; 95% CI: 41.5–43.7), while 92.1% (95% CI: 91.3–92.9) had institutionalized childbirth. Moderate (PR: 1.10; 95% CI: 1.08–1.12) and high (PR: 1.13; 95% CI: 1.12–1.15) levels of women's autonomy were found to be associated with institutionalized childbirth, and the same association was found in the adjusted analysis.

**Conclusion** Being a woman with a higher level of autonomy was related to a higher prevalence of institutionalized childbirth. Therefore, as decision-making is a multifactorial characteristic, it is necessary to study in depth the determinants of non-institutionalized childbirth in women with less autonomy.

## Significance

*What is already known on this subject?* Women's autonomy is a strategy to improve health conditions and various socio-economic aspects of women's lives and their environment. Several studies have found that women with high autonomy are

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positively associated with their health and access to maternal health services, such as institutionalized childbirth.

*What this study adds?* This study found that Peruvian women with a high level of autonomy were more likely to have an institutionalized childbirth. This finding can contribute to government institutions to guide the strategies already in place to improve various aspects of women's lives and enhance their autonomy.

## Introduction

Maternal and child health is a global health priority. Global maternal and neonatal mortality rates are among the world's highest health priorities (United Nations, 2021), and while the Sustainable Development Goals aim to reduce these rates to less than 70 deaths per 100,000 live births and less than 12 neonatal deaths per 1000 live births, in 2017, more than 290,000 women died during and after pregnancy and childbirth, and more than two million neonates died, with the vast majority of these deaths occurring in low- and middle-income countries (Hug et al., 2019; WHO & UNFPA, 2023). In the Latin America and Caribbean (LAC) region, the maternal mortality rate was six times higher than that reported in Europe and the United States in 2017 (WHO, & UNICEF, UNFPA, 2023). The neonatal mortality rate that year showed the same pattern, with LAC having a rate of 9.6 deaths per thousand live births, which is higher than reports in Europe (2 deaths), Asia (7 deaths), and North America (3 deaths) (WHO, & UNICEF, UNFPA, 2023). The utilization of institutionalized childbirth is a critical factor associated with maternal mortality, as it has been estimated that the global adoption of this strategy could decrease maternal deaths by 16–33%. (Graham et al., 2001). Therefore, in these regions, timely maternal health services, including prenatal care and institutionalized childbirth, is crucial to reducing maternal and neonatal morbidity and mortality (Nigusie et al., 2021).

Institutionalized childbirth is a strategy based on labor and postpartum care in a health facility, attended by qualified personnel (physician, nurse, or obstetrician) (Muluwas Amentie et al., 2016). Globally, the rate of institutionalized childbirths was estimated to be 83% from 2014 to 2020, with the LAC region showing similar percentages to North America (95 vs. 99%; respectively) (UNICEF, 2021a). The use of institutional delivery services is key to improving maternal health and well-being by reducing maternal mortality through safe delivery and reducing related obstetric complications (postpartum hemorrhage, sepsis, miscarriage, and hypertensive diseases of pregnancy) that may occur during and after delivery (Girum & Wasie, 2017).

Among the factors influencing the decision to opt for an institutionalized childbirth are the woman's age, distance to the nearest health facility, educational level, socioeconomic level, number of prenatal controls, number of pregnancies, and the woman's autonomy (Adhikari, 2016; Chol et al., 2019; Mondal et al., 2020). These factors may vary according to the region in which the woman resides, and socioeconomic and cultural factors may reduce the opportunity for institutionalized childbirth in these populations. Autonomy of women's decision-making is defined as the degree of their independence in finances, health and home-related matters, and the freedom to visit outside the home without obtaining permission from a partner or husband. It is considered an important intervention for maternal health, women's well-being, and the utilization of quality maternal health services (Aliyu & Dahiru, 2017). Some studies have analyzed the influence of women's autonomy on access to maternal health services using surveys conducted under the Demographic and Health Surveys (DHS) program in various regions of the world, being that in some countries, it is described that a high level of women's autonomy is related to the use of maternal health services, including institutionalized childbirth, while in others, there would be no association (Adhikari, 2016; Chol et al., 2019; Mondal et al., 2020). What has been described highlights the need to study the influence of women's autonomy in institutionalized childbirth, considering the reality of each region and country.

There is a high prevalence of maternal (88 maternal deaths per 100,000 live births) and neonatal (seven deaths per 1000 live births) mortality in Peru (UNICEF, 2021b; WHO and UNICEF, UNFPA, 2023). Despite this, most women do not receive adequate care during pregnancy, childbirth, or postpartum, and this is even more relevant when economic, cultural, and geographic barriers hinder the care of pregnant women. In Peru, more than 6% of all births occur at home and are attended by unskilled personnel, especially in rural areas and in the Highlands and Jungle (Hernández-Vásquez et al., 2021). Indeed, in one community in the Peruvian jungle, reproductive decisions were found to be made mainly by men, whose preferences are not usually in line with those of women (Guerra-Reyes & Iguñiz-Romero, 2019). Thus, women's cultural knowledge about childbirth must be adequately considered, and dialogue about women's beliefs needs to be respected when conducting maternal care protocols. In the Latin American region, Peru is one of the countries that lead initiatives on women's economic autonomy, with government policies aimed at achieving equality in access to employment and remuneration, allowing decision-making about education and health, crucial to achieving increased coverage of maternal care services (Ministerio de la Mujer y Poblaciones Vulnerables, 2021). Nonetheless, scientific evidence on women's

autonomy and its association with institutionalized childbirth remains scarce in Peru. Therefore, the objective of the present study was to determine the association between Peruvian women's autonomy and place of delivery using the Demographic and Family Health Survey (ENDES - acronym in Spanish) 2019.

## Methods

### Study Design and Population

An analytical cross-sectional study was conducted of secondary data from the ENDES 2019. The ENDES is a survey routinely conducted by the National Institute of Statistics and Informatics (INEI - acronym in Spanish) within the framework of the global DHS program. This survey is representative at the national and departmental level (24 departments of Peru and the Constitutional Province of Callao), by urban and rural area, and by the geographic domain (Coast, Highlands, and Jungle) (Instituto Nacional de Estadística e Informática, 2019). The ENDES is composed of three questionnaires that collect specific information on health indicators, sociodemographic, maternal, and child health. These questionnaires are (1) household questionnaire, which collects information on the assets and characteristics of the surveyed households; (2) individual questionnaire, which collects sociodemographic and health data of women aged 15 to 49 years; and (3) health questionnaire, which is related to information on infectious and chronic non-communicable diseases in people aged 15 years and older. On the other hand, the ENDES has a probabilistic, two-stage (clusters and dwellings), balanced, stratified, and independent sampling, in which the primary sampling units are the usual residents of selected dwellings in urban and rural areas who have stayed overnight the night before the survey (Instituto Nacional de Estadística e Informática, 2019). More details on the ENDES methodology can be obtained from the survey report ([shorturl.at/dfhou](http://shorturl.at/dfhou)).

### Inclusion/Exclusion Criteria

The present study included Peruvian women aged 15–49 years who currently have a partner (married or cohabiting), had a pregnancy in the last five years that resulted in a live birth, and had complete information in the maternal health module of the individual questionnaire of the ENDES 2019. It should be noted that if the women had two or more children, the last live birth was included in the study. Women with incomplete data on the variables of interest were excluded.

## Variables

### Dependent Variable

The dependent variable was institutionalized childbirth, which was generated from the variables self-reported by the mother: M15 (which provides knowledge of the place of delivery where the interviewee delivered her last live child) and the variables that refer to the person who attended the interviewee in the delivery of her child (M3A, M3B and M3C) in the last five years. The dependent variable was recoded with “1”, when the birth was attended in a health facility (hospital/clinic/health center/consultant's office) and by qualified health personnel (doctor, obstetrician, or nurse), and “0”, when it was attended at home and by unskilled personnel (family member, midwife, among others).

### Independent Variable

The independent variable was women's autonomy. With respect to its operational definition, different studies analyzing surveys with a similar format to that of the ENDES have used different measures and compositions. Nevertheless, common components have been delimited for the construction of the independent variable (Adhikari, 2016; Danielsson et al., 2019; Mondal et al., 2020). Although several studies use the definition of autonomy and empowerment interchangeably, these definitions differ in the forms or capacities of women, with autonomy referring to the capacity to make decisions and exercise control over economic, material, and social resources (Basu & Koolwal, 2005).

The autonomy variable was constructed based on four domains: (i) household decision making, which comprises household decision making in terms of economic, health and free movement; (ii) attitude towards violence, which consists of women's justification in various aspects where men exert violence; (iii) socioeconomic aspects, which comprises employment and head of household; and (iv) sociocultural aspects, which consists of women's educational level and access to media. The categorization of each of these variables that make up the domains was based on previous studies that constructed the variable women's autonomy using data from low- and middle-income countries (Adhikari, 2016; Chol et al., 2019; KC & Neupane, 2016; Mondal et al., 2020). Likewise, each variable included in the construction, as well as its categorization, is shown in Table 1 of the Supplementary Material.

To determine the levels of autonomy, an index was constructed with the sum of the final scores of each of the variables included. Finally, the constructed index was

classified into terciles to determine the low, moderate and high levels of autonomy, in which higher scores represent a higher level of autonomy. All the processes for the construction of this variable were based on previous studies (Asaolu et al., 2018; Mganga et al., 2021; Ram et al., 2022; Rettig et al., 2020; Wado, 2018).

### Covariates

Based on the biomedical literature, the following covariates were considered (Adhikari, 2016; Chol et al., 2019; KC & Neupane, 2016; Mondal et al., 2020): age of mother (in years), educational level of partner (no level or primary, secondary, higher), marital status of mother (married, cohabiting), ethnic self-identification of mother (native, non-native), prenatal controls (8 or more, less than 8), number of children (0, 1–3, 4 or more), birth order of child from the last pregnancy (1, 2–3, 4 or more), type of pregnancy (single, multiple), desired pregnancy (yes, no), area of residence (urban, rural), wealth quintile (poorest, poorer, middle, richer, richest) and natural region (Coast, Highlands, Jungle).

### Statistical Analysis

Statistical analysis was performed using Stata v.14.2 software (Stata Corporation, College Station, Texas, USA). All analyses were performed using the *svy* command to include the complex sampling characteristics of the ENDES. The characteristics of individuals included were reported using counts and weighted proportions with 95% confidence intervals (CI). Bivariate analysis was performed using the chi-square test to compare the proportions of covariates with women's autonomy and institutionalized childbirth. In addition, the association between women's autonomy and institutionalized childbirth was evaluated using Poisson family generalized linear models with logarithmic link function, and crude (PR) and adjusted prevalence ratios (aPR) with their respective 95% CIs were estimated. For the estimation of the aPR, the model was adjusted for variables that were relevant confounding factors in this association under epidemiological criteria, and that had a value of  $p < 0.05$  in the bivariate analysis with the dependent variable. Finally, the variance inflation factor (VIF) was evaluated to determine the collinearity of the variables included in the model, in which it was found that the highest value was 2.19 and the lowest was 1.01, indicating a lack of collinearity in the model. To delimit statistical significance in all analyses, a value of  $p < 0.05$  was considered.

### Ethical Considerations

The study did not require the approval of an ethics committee because it was an analysis of aggregated secondary data

that is in the public domain and does not allow the identification of the participants evaluated.

## Results

Data from 15,334 women aged 15–49 years were included in the analysis. In relation to the sociodemographic characteristics, the majority of women belonged to the 25–34 year-old age group (47.5%), had attained a secondary level of education (45.2%), were cohabiting (71.9%), and identified themselves as non-native ethnicity (93.5%). More details about the characteristics of the population included are shown in Table 1.

In relation to women's autonomy, 42.6% (95% CI: 41.5–43.7) of women had a low level of autonomy, followed by 39.0% (95% CI: 37.9–40.1) with moderate autonomy, and 18.4% (95% CI: 17.5–19.3) with high autonomy. In addition, high autonomy was more frequent in women aged 15–24 years (20.4%), who had a married marital status (24.6%), and self-identified as non-native ethnicity (19.3%). Regarding partner characteristics, women whose partners had a higher educational level more frequently presented a high level of autonomy (33.3%). In relation to pregnancy characteristics and autonomy, the latter was more frequent in women who had eight or more prenatal controls (20.3%) when it was their first child (24.4%), had no children (22.2%), and it was a desired pregnancy (21.2%). Regarding household characteristics, women with a high level of autonomy resided in an urban area (23.3%), belonged to the richest quintile (42.5%), and resided on the Coast (22.3%) (Table 2).

The prevalence of institutionalized childbirth was 92.1 (95% CI: 91.3–92.9) (vs. 7.9% of home births). An institutionalized delivery was more frequent in the 35–49-year-old age group (93.0%), in women who were married (93.7%), and in those who identified themselves as non-native ethnicity (92.8%). It was also more frequent in women whose partners had a higher level of education (96.7%). Regarding pregnancy characteristics, the frequency of institutionalized delivery was higher in women who had eight or more prenatal controls (94.3%), had no children (93.7%), it was their first child (94.9%), and had desired pregnancy (93.5%). Within the household characteristics, among the women who opted for an institutionalized childbirth, the vast majority resided in an urban area (96.3%), came from the coastal region (95.7%), and belonged to the richest quintile (98.4%) (Table 3).

In the evaluation of the association between women's autonomy and place of delivery, moderate (PR: 1.10; 95% CI: 1.08–1.12) and high (PR: 1.13; 95% CI: 1.12–1.15) levels of women's autonomy were associated with institutionalized. In the model adjusted for the variables age of mother,

**Table 1** Characteristics of the population of women aged 15–49 years registered in the ENDES 2019

Characteristic	Population included in the study	
	Count ( <i>n</i> = 15,334)	Weighted proportion*
Age of mother (in years)		
15–24	3335	20.9 (20.1–21.7)
25–34	7320	47.5 (46.5–48.6)
35–49	4679	31.6 (30.6–32.6)
Educational level of mother		
No level / primary	3128	19.7 (18.9–20.6)
Secondary	7102	45.2 (44.1–46.3)
Higher	5104	35.1 (33.9–36.2)
Educational level of partner		
No level / primary	2335	15.2 (14.4–16.1)
Secondary	7556	48.7 (47.5–49.8)
Higher	5443	36.1 (35.0–37.2)
Marital status of mother		
Married	4090	28.1 (27.0–29.1)
Cohabiting	11,244	71.9 (70.9–73.0)
Ethnic self-identification of mother		
Native	1363	6.5 (5.9–7.2)
Non-native	13,971	93.5 (92.8–94.1)
Prenatal controls		
8 or more	9569	62.2 (61.1–63.3)
Less than 8	5765	37.8 (36.7–38.9)
Number of children		
0	4171	28.0 (27.0–29.0)
1–3	10,843	70.1 (69.1–71.1)
4 or more	320	1.9 (1.7–2.2)
Birth order of child		
1	4436	29.8 (28.8–30.7)
2–3	8007	52.5 (51.5–53.5)
4 or more	2891	17.7 (17.0–18.6)
Type of pregnancy		
Single	15,196	99.2 (99.0–99.3)
Multiple	138	0.8 (0.7–1.0)
Desired pregnancy		
Yes	7497	49.0 (48.0–50.1)
No	7837	51.0 (49.9–52.0)
Area of residence		
Urban	10,852	73.7 (72.8–74.6)
Rural	4482	26.3 (25.4–27.2)
Wealth quintile		
Poorest	4154	24.0 (23.1–25.0)
Poorer	4210	24.6 (23.6–25.7)
Middle	3076	19.7 (18.9–20.6)
Richer	2296	17.2 (16.3–18.2)
Richest	1598	14.5 (13.6–15.4)
Natural region		
Coast	6423	55.0 (53.9–56.3)
Highlands	5119	27.7 (26.4–29.0)
Jungle	3792	17.3 (16.3–18.3)

\*The weighting factor and complex sampling of the ENDES 2019 were included

**Table 2** Characteristics of the adult population according to women's autonomy, ENDES 2019

Characteristic	Women's autonomy			p-value*
	Low (n = 6845)	Moderate (n = 5886)	High (n = 2603)	
Overall	42.6 (41.5–43.7)	39.0 (37.9–40.1)	18.4 (17.5–19.3)	
Age of mother (in years)				
15–24	42.8 (40.8–44.8)	36.9 (34.9–38.9)	20.4 (18.7–22.2)	< 0.001
25–34	39.7 (38.2–41.2)	40.9 (39.4–42.5)	19.4 (18.1–20.8)	
35–49	48.9 (46.7–51.1)	37.9 (35.8–40.1)	13.2 (11.7–14.8)	
Educational level of mother				
No level / primary	78.7 (76.6–80.7)	18.2 (16.3–20.3)	3.1 (2.3–4.0)	< 0.001
Secondary	47.3 (45.8–48.9)	40.5 (39.1–42.1)	12.1 (11.1–13.2)	
Higher	20.9 (19.5–22.5)	45.7 (43.8–47.7)	33.3 (31.5–35.3)	
Marital status of mother				
Married	37.0 (34.9–39.1)	38.4 (36.3–40.6)	24.6 (22.4–26.9)	< 0.001
Cohabiting	44.8 (43.5–46.1)	39.2 (38.0–40.5)	16.0 (15.0–17.0)	
Ethnic self-identification of mother				
Native	72.5 (68.9–76.0)	21.5 (18.4–24.9)	6.0 (4.3–8.3)	< 0.001
Non-native	40.5 (39.4–41.7)	40.2 (39.1–41.4)	19.3 (18.3–20.3)	
Prenatal controls				
8 or more	39.3 (38.0–40.6)	40.4 (39.1–41.8)	20.3 (19.1–21.5)	< 0.001
Less than 8	48.0 (46.2–49.9)	36.7 (34.9–38.5)	15.3 (13.9–16.7)	
Number of children				
0	37.3 (35.3–39.3)	40.5 (38.4–42.6)	22.2 (20.3–24.3)	< 0.001
1–3	43.9 (42.6–45.2)	38.8 (37.6–40.1)	17.3 (16.3–18.3)	
4 or more	72.3 (65.8–78.1)	24.5 (19.3–30.7)	3.1 (1.2–8.2)	
Birth order of child				
1	32.6 (30.8–34.4)	43.0 (41.0–45.0)	24.4 (22.6–26.4)	< 0.001
2–3	40.5 (39.0–41.9)	40.7 (39.2–42.2)	18.9 (17.7–20.1)	
4 or more	65.6 (63.3–67.9)	27.5 (25.4–29.7)	6.9 (5.6–8.5)	
Type of pregnancy				
Single	51.4 (41.4–61.3)	35.9 (26.7–46.2)	12.7 (7.4–21.2)	0.173
Multiple	42.5 (41.4–43.7)	39.0 (37.9–40.2)	18.4 (17.5–19.4)	
Desired pregnancy				
Yes	46.0 (44.5–47.5)	38.3 (36.8–39.8)	21.2 (19.9–22.5)	< 0.001
No	39.1 (37.5–40.6)	39.8 (38.3–41.3)	15.7 (14.5–17.0)	
Area of residence				
Urban	32.3 (31.0–33.6)	44.5 (43.1–45.8)	23.3 (22.1–24.5)	< 0.001
Rural	71.5 (69.4–73.4)	23.7 (22.0–25.5)	4.8 (4.0–5.7)	
Wealth quintile				
Poorest	76.8 (75.0–78.5)	20.2 (18.6–21.9)	3.0 (2.4–3.7)	< 0.001
Poorer	47.7 (45.5–49.9)	41.5 (39.4–43.7)	10.8 (9.6–12.2)	
Middle	32.0 (29.8–34.3)	48.7 (46.2–51.2)	19.3 (17.6–21.2)	
Richer	23.9 (21.6–26.3)	46.7 (44.0–49.5)	29.4 (26.9–32.1)	
Richest	13.9 (11.9–16.3)	43.6 (40.1–47.1)	42.5 (38.8–46.2)	
Natural region				
Coast	33.2 (31.5–34.8)	44.5 (42.8–46.3)	22.3 (20.8–23.9)	< 0.001
Highlands	51.0 (49.0–53.0)	33.6 (32.0–35.3)	15.4 (14.1–16.7)	
Jungle	59.2 (57.0–61.5)	30.0 (28.1–32.0)	10.7 (9.6–12.0)	

\*The p-value was calculated using the chi-square test

**Table 3** Characteristics of women aged 15–49 years according to place of delivery, ENDES 2019

Characteristic	Institutionalized childbirth		p-value*
	No (n = 1029)	Yes (n = 14,305)	
Overall	7.9 (7.1–8.7)	92.1 (91.3–92.9)	
Age of mother (in years)			
15–24	9.3 (8.0–10.8)	90.7 (89.2–92.0)	0.038
25–34	7.9 (6.9–9.0)	92.1 (91.0–93.1)	
35–49	7.0 (5.8–8.4)	93.0 (91.6–94.2)	
Educational level of partner			
No level / primary	21.2 (18.7–23.8)	78.8 (76.2–81.3)	< 0.001
Secondary	7.2 (6.2–8.2)	92.8 (91.8–93.8)	
Higher	3.3 (2.4–4.4)	96.7 (95.6–97.6)	
Marital status of mother			
Married	6.3 (5.3–7.5)	93.7 (92.5–94.7)	0.002
Cohabiting	8.5 (7.6–9.5)	91.5 (90.5–92.4)	
Ethnic self-identification of mother			
Native	18.4 (14.5–23.1)	81.6 (76.9–85.5)	<0.001
Non-native	7.2 (6.4–8.0)	92.8 (92.0–93.6)	
Prenatal controls			
8 or more	5.7 (4.9–6.6)	94.3 (93.4–95.1)	< 0.001
Less than 8	11.5 (10.1–13.0)	88.5 (87.0–89.9)	
Number of children			
0	6.3 (5.1–7.8)	93.7 (92.2–94.9)	< 0.001
1–3	8.2 (7.4–9.1)	91.8 (90.9–92.7)	
4 or more	20.1 (15.3–26.0)	79.9 (74.0–84.7)	
Birth order of child			
1	5.1 (4.3–6.2)	94.9 (93.8–95.8)	< 0.001
2–3	6.5 (5.6–7.6)	93.5 (92.4–94.4)	
4 or more	16.6 (14.7–18.8)	83.4 (81.2–85.3)	
Type of pregnancy			
Single	7.9 (7.2–8.8)	92.1 (91.2–92.8)	0.270
Multiple	4.3 (1.4–12.7)	95.7 (87.3–98.6)	
Desired pregnancy			
Yes	6.5 (5.6–7.6)	93.5 (92.4–94.5)	< 0.001
No/never/para>	9.2 (8.2–10.3)	90.8 (89.7–91.8)	
Area of residence			
Urban	3.7 (3.0–4.5)	96.3 (95.6–97.0)	< 0.001
Rural	19.8 (17.6–22.2)	80.2 (77.8–82.4)	
Wealth quintile			
Poorest	22.1 (19.8–24.5)	77.9 (75.5–80.2)	< 0.001
Poorer	4.4 (3.2–6.0)	95.6 (94.0–96.8)	
Middle	4.4 (3.0–6.5)	95.6 (93.5–97.0)	
Richer	2.4 (1.6–3.7)	97.6 (96.4–98.5)	
Richest	1.6 (0.9–2.6)	98.4 (97.4–99.1)	
Natural region			
Coast	4.3 (3.4–5.4)	95.7 (94.6–96.6)	< 0.001
Highlands	9.3 (7.9–11.0)	90.7 (89.0–92.1)	
Jungle	17.0 (14.7–19.6)	83.0 (80.5–85.3)	

\*The p-value was calculated using the chi-square test

educational level of partner, marital status of mother, ethnic self-identification of mother, prenatal controls, number of children, birth order of child, desired pregnancy, area of residence, wealth quintile, and natural region, the relationships previously described remained significant: aPR: 1.02; 95% CI: 1.01–1.03 for women with moderate autonomy and aPR: 1.03; 95% CI: 1.02–1.04 for women with high autonomy (Table 4).

## Discussion

The study sought to evaluate the association between Peruvian women's autonomy and institutionalized childbirth. The findings of this study indicate that 9 out of 10 women who gave birth in the past five years gave birth in a health facility. In addition, most women of childbearing age have low autonomy, and few have high autonomy. In the study of the association between the variables of interest, women with a higher level of autonomy (moderate or high) presented a higher probability of institutionalized childbirth compared to their peers with a low level of autonomy.

Regarding institutionalized childbirth, 92% of women aged 15–49 years had had an institutionalized childbirth in the last five years. This figure is above the world average (83.57%), and slightly below the average for the LAC region (95%) (World Health Organization (WHO), 2021). It should also be considered that almost seven out of every 100 women aged 15–49 years (6.8%) have had a home birth which was attended by unskilled personnel between 2015 and 2017, a finding that is consistent with the results of our study (Hernández-Vásquez et al., 2021). Although this high coverage of institutionalized childbirths could be attributed to higher coverage of maternal health services (which encompasses delivery care by skilled professionals) in the country, this is not always the case (Enríquez Canto, 2022). Among women from the Highlands and Jungle (areas with low health care coverage due to their geographic conditions and poverty), there is a cultural preference in which a proportion of these women choose

home births attended by unskilled personnel (Hernández-Vásquez et al., 2021). However, these populations of women could be assigned to various social programs that would help promote the use of maternal health services, such as the JUNTOS program, which provides cash transfers to people living in rural areas with higher levels of poverty and pregnant women on the condition that they access certain health services and improve health indicators (Cecchini et al., 2014). In addition, it has been observed that the demand for maternal health services has increased in recent years, which could promote delivery care in health facilities (Organization, 2015). Therefore, it is necessary to continue promoting this type of measures and even development of new social programs that continue to encourage institutionalized childbirth in the Peruvian territory.

Regarding autonomy among women of childbearing age, having a low level of autonomy was more frequent in approximately 4 out of 10 women, while 2 out of 10 women had a high level of autonomy. In Peru, the indicators for women's decision-making regarding their sexuality and reproduction have improved, with maternal mortality decreasing from 265 deaths in 1990 to 68 in 2015 and teenage pregnancy from 13.7% in 2014 to 11.7% in 2018 (Instituto Nacional de Estadística e Informática, 2020b, 2020a). However, this has not occurred equally among the entire population, with progress having been slower in low-income groups in which women have a lower proportion of decision-making power over their lives (Instituto Nacional de Estadística e Informática, 2020a, 2020b). Women's autonomy is not only described as a factor that increases prenatal care and delivery in health facilities but rather it is also related to more adequate inter-gestational periods (Pimentel et al., 2020), favoring women's recovery after pregnancy and preventing the appearance of complications during the next pregnancy. It is necessary to promote the and ensure the protection of the integrity of their lives and sexuality in high-risk groups.

Women residing on the Coast and in urban areas presented the highest prevalence of high autonomy. Additionally, in women with lower economic levels, and lower

**Table 4** Association between women's autonomy and institutionalized childbirth, 2019 ENDES

Characteristic	Crude model		Adjusted model <sup>a</sup>	
	PR (95% CI)	p-value	aPR (95% CI)	p-value
Women's autonomy				
Low	Ref.		Ref.	
Moderate	1.10 (1.08–1.12)	< 0.001	1.02 (1.01–1.03)	0.016
High	1.13 (1.12–1.15)	< 0.001	1.03 (1.02–1.04)	< 0.001

<sup>a</sup>Adjusted for the covariates age, educational level of the partner, marital status, ethnic self-identification, prenatal controls, number of children, birth order of child, desired pregnancy, area of residence, wealth quintile and natural region.

PR prevalence ratio; aPR adjusted prevalence ratio; 95% CI 95% confidence interval; Ref reference category



educational levels the autonomy was lower. This indicates that women with higher levels of autonomy come from regions of Peru that are more economically developed and have had greater opportunities for development. These conditions favor medical care, including institutionalized childbirth, because women from more developed regions have better access to both public and private medical services (Castillo-Contreras & Flores-Flores, 2019). In many countries, including Peru, rural areas present barriers to health care, including difficult geographic access to health facilities, language barriers, care provided by male staff or staff with little training in cross-cultural health care, and the lack of access to health care services (Del Mastro et al., 2021; Webster, 2018; Yajahuanca et al., 2013). This favors the use of traditional medicine and maternal care by midwives (Del Mastro N, et al., 2021). Although Peru has seen an increase in the proportion of women from rural areas and lower socioeconomic levels who have received institutionalized childbirth care (Instituto Nacional de Estadística e Informática, 2020a), strategies to improve facility-based childbirth should focus on improving different indicators, including women's autonomy.

Women who identified themselves as non-native had a higher prevalence of moderate and high autonomy. Historically, in Peru and other countries with different native communities, there has been inequity in access to maternal health services among native populations and the most economically disadvantaged groups (Akter et al., 2019b). The native population requires health services with an intercultural approach and professionals with cultural competencies, integrating the culture and beliefs of native communities into the health care system (Davy et al., 2016). Patterns of behavior in native populations may imply less decision-making power regarding women's bodies and lives, including reproductive and maternal health decisions (Sivertsen et al., 2020). Therefore, it is necessary to develop specific strategies for this type of communities in order to increase their access to health services by improving geographical access or services (distance, cost, means of transportation, and comfort), reducing language barriers, disseminating the range of services available in health facilities for pregnant women, as well as integrating the components of their worldview and customs in health issues so that these women receive comprehensive care for the entire continuum of maternal health (Akter et al., 2019a).

It was found that women with a moderate or high level of autonomy were more likely to have institutionalized childbirth. In this regard, studies in low- and middle-income countries have similarly described that women with higher levels of autonomy are more likely to receive prenatal care as well as to choose or receive skilled birth attendance in a health facility (Adhikari, 2016; KC & Neupane, 2016; Mondal et al., 2020). These two conditions are widely

described in the literature and recommended by the World Health Organization as strategies for the reduction of maternal morbidity and mortality (Hamilton et al., 2021). In our study, characteristics such as higher socioeconomic status, educational level, and residing in urban areas were related to greater female autonomy and institutionalized childbirth. Finding that the highest proportions of institutionalized childbirth occur in women with these characteristics would indicate that in the Peruvian population, there are sociodemographic characteristics in accordance with the literature regarding institutionalized childbirth and women's autonomy. With this, it is possible to promote the improvement and development of strategies in groups of women whose autonomy is lower, with the aim of providing knowledge and guidance, as well as facilitating access to medical care in relation to pregnancy, so that these women can receive adequate care throughout the continuum of maternal health.

Among the limitations of the study, it should be noted that causality could not be established due to the lack of temporality inherent to the cross-sectional study design. Likewise, there could have been inaccuracies in the data collected by the survey attributable to possible memory bias or social desirability, given that many of the data obtained as part of the survey were obtained by self-reporting by the participants or that some questions may not have been well understood. Finally, there are variables related to the mother's religion or birth characteristics (birth weight) that have not been included due to lack of availability or low number of observations. Despite the above, the use of a national survey database, the methodology of which is widely used in various countries for the study of the health status of the population, and has a proven methodology and quality control, can be considered an adequate source of information for the study of the problem of interest.

In conclusion, it was found that 9 out of 10 women had had an institutionalized childbirth. In addition, low and moderate autonomy was more frequent than high autonomy among the women studied. Regarding the relationship between autonomy and institutionalized childbirth, being a woman with a higher level of autonomy (moderate or high) was related to a higher prevalence of institutionalized childbirth. These results are in line with what has been described in the literature regarding the place of delivery and women's autonomy. Therefore, since decision making is a multifactorial characteristic, an in-depth study of the determinants of non-institutional childbirth in women with less autonomy is necessary, as well as the development of strategies that favor institutionalized childbirth in this subgroup of women. If a woman herself decides that her childbirth should not take place in a health facility, necessary information and means for safe and hygienic labor care at home or in waiting homes should be provided, as well as to guarantee access to medical care in the event of complications related to childbirth.

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**Data Availability** The databases used in this study are freely accessible from the website of the INEI (<http://inei.inei.gob.pe/microdatos/>).

## Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical Approval** The study did not require the approval of an ethics committee because it was an analysis of aggregated secondary data that is in the public domain and does not allow the identification of the participants evaluated.

**Consent to Participate** Not applicable.

**Consent for Publication** Not applicable.

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