

## Health, childlessness and poverty in Latin American countries

Salud, no tener hijos y pobreza en países latinoamericanos

Saúde, mulheres sem filhos e pobreza em países da América Latina

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### Abstract

Recent literature proposes that poverty could lead women to remain childless, thus attenuating or reverting higher fertility typically observed among women of lower schooling level. We explore the role of health in this approach: does health have a distinctive detrimental effect on fertility among women of lower schooling levels? To that end, we compute the gap in the definite childlessness rate by self-reported disability status across schooling levels. Due to the scarcity of survey data from definite childless women, in addition to the small sample sizes, we use census samples. Focusing on women between 40-50 years old and using 23 census samples from Latin America countries (2000-2011), we found that only in the group with lower schooling level there is a clear gap in the definite childlessness rate by self-reported disability status. From our descriptive analysis we conclude that health could indeed play an influential role in the childless by poverty approach.

Fertility; Education; Poverty

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## Introduction

Female health, fertility and socioeconomic position are intrinsically linked. Those issues are closely related to fundamental goals of well-being and gender equality <sup>1</sup>, and the intersection between them is a central topic in the social sciences.

An emerging topic in fertility dynamics is childlessness. Although childlessness has never been uncommon (there is evidence, for example, of cases from pre-industrial England <sup>2</sup> and France <sup>3</sup>), childlessness has grown in many countries and fertility rates have decreased to low or even very low levels <sup>4,5</sup>.

Meanwhile, more studies are drawing attention to the need to better understand the phenomena of childlessness <sup>6,7,8,9</sup>. In the words of Tomas Frejka <sup>10</sup> (p. 176), a key author in this field, “*the mechanisms that shaped the facts [childlessness] have not been thoroughly deciphered*”.

The available literature provides evidence of the influence of economic and social conditions as well as cultural norms on the path to childlessness; those are probably among the most influential determinants for this phenomenon <sup>10</sup>. There is also an ongoing discussion about the different paths to childlessness, mostly focused on childless women without addressing the childlessness rate. Besides the mutual causation between socioeconomics, demography and health issues, one regularity in the results from individual-level analysis is the well-known association between higher schooling levels and higher childlessness.

The literature about education and childlessness, however, has focused on highly educated women when compared to their counterparts, leaving the childless and disadvantaged women relatively out of the main picture. The dynamics of childlessness among such women are often not in line with common wisdom: their childless rate is usually higher than that of women with secondary education, therefore breaking the expected association between childlessness and education. Indeed, in a demographic study of cohorts with completed fertility, the results for nine out of 18 European countries showed higher childlessness rates among women with lower schooling level <sup>11</sup>. A recent book on childlessness in developed countries tells mostly the same story; be it in France <sup>12</sup>, Germany <sup>13</sup>, Finland <sup>14</sup> and Sweden <sup>15</sup>. As we show in our study, the same is true in several Latin American countries.

Thus far there is no clear explanation for the higher childlessness rate among women with lower schooling levels. Only a few papers discuss the issue, mentioning that difficulties in civil union formation were a central factor behind the higher childlessness rate of women with lower schooling level in Finland <sup>14</sup> and France <sup>12</sup>. We argue that health issues could be another reason. The available literature focuses on infecundity as an obvious explanation to involuntary childlessness, but infecundity probably explains little of this phenomenon <sup>16</sup> (as, for example, is the case in Europe <sup>11</sup>) thus allowing for more diverse roles for health. One study <sup>14</sup> already drew attention to the access to health services of childless women with lower schooling level, as well as infertility treatments, and counselling. Additionally, a study of childlessness in Poland <sup>8</sup> found that childless-and-disadvantaged women report health issues as a primary factor on their lives. Moreover, higher childlessness among black women in the United States during the 20th century has been linked, at least in part, to socioeconomic disadvantages <sup>11</sup>.

One approach to understand how the intersection of health and poverty is determinant for childlessness is the idea of “childless by poverty”, i.e., the idea that women in poverty might be forced to remain childless. This approach, developed in Baudin et al. <sup>17,18</sup>, is based on the theory of capabilities, where poverty is seen as a matter of means and freedom <sup>19</sup>. In this model, women need to consume a minimum level of resources in order to become mothers. The causation in this argument, therefore, goes from poverty to childlessness. Baudin et al. <sup>17,18</sup> briefly propose that health issues could be the main mediating factors linking childlessness to poverty, as health issues push poorer women below the minimum level of consumption. For the United States, a Baudin et al. study <sup>17</sup> found a U-shape association between childlessness and education, and thus concluded that poverty explains one extreme while opportunity costs the other. Then, focusing on 36 non-developed countries, another Baudin et al. study <sup>18</sup> used a behavioral model including the variables education, time cost, preferences, non-labor income, bargaining, minimum consumption, natural sterility, mortality rates and assortative matching, and found that in the poorest countries, childlessness is mostly driven by

poverty. Baudin et al.<sup>17,18</sup> argue that a substantial proportion of childlessness in the lower schooling group can be attributed to poverty.

Health issues could be part of the explanation for the higher-than-expected childlessness among women with lower schooling level. To add quantitative evidence on the role of health, we use census data to compute the childlessness rate by schooling level and disability groups. Disability is one of the most important measures of health and is central in various summary measures of well-being (such as the DALYs, i.e., disability-adjusted life years). Nearly all available scientific literature on childlessness by schooling level is focused on developed countries, while our study is focused on Latin American countries. We found that in most countries, and most regions within a country, the childlessness rate of women with disabilities is slightly higher than that of able-bodied women; except for the group with lower schooling levels, in which women with disabilities show a considerably higher childlessness rate. Our findings do not prove a causal relation between health, poverty and childlessness, but they do uncover an empirical regularity that is visible across most countries in our database and most regions within those countries.

## Data and methods

Our study focuses on definite childlessness. Many economic studies about fertility focus on the first child, or the second, and so on. The first child marks the transition from temporary childlessness to motherhood, but the concept of childlessness is much more related to the idea of definite rather than temporary childlessness<sup>20</sup>, that is, the proportion of women past their reproductive age that did not have any live births. Studies on childlessness trends<sup>21,22</sup>, longitudinal studies of pathways into childlessness<sup>9,23,24</sup> and the impact of employment on childlessness<sup>15,25,26,27</sup>, have a natural focus on definite childlessness. Naturally, the literature on the consequences of childlessness for older individuals, and its long-term implications for demographic changes and human reproduction, depends crucially on definite rather than temporary fertility.

## Data

The sample sizes available for the study of definite childlessness are very low: the subsample of childless women with low schooling level in the 40 to 50-year-old range (upper boundary set in order to avoid the additional influence of pension dynamics on the analysis) can be a minimal proportion of the overall sample. Moreover, most socioeconomic surveys lack a question on total fertility; in fact, several studies use the absence of a co-residential own-children as an indicator of childlessness, but this is probably not accurate in the 40 and over age range<sup>20,28</sup>, especially in the contexts of high migration<sup>29</sup>. There is not much evidence on the association between definite childlessness and different socioeconomic measures.

We used census samples for this study. First, childless women in the 40-50 years range are relatively scarce; survey data about uncommon groups are especially sensitive to both sampling and non-sampling errors. Second, censuses are among the few sources that include the question of “how many children have you ever had?”. Lastly, there is a wide set of microdata from census samples available at the IPUMS project website (<https://international.ipums.org/international/>), carefully organized and standardized (The Integrated Public Use Microdata Series project is a collaboration of the University of Minnesota/USA, National Statistical Offices, international data archives, and other international organizations). Africa and Latin America are the two most common regions in the data, but we focus on Latin American countries only because in Africa the group with lower schooling level is too prevalent and therefore it is probably not a good marker for relative poverty.

The census samples in our study are: Brazil 2000 and 2010; Chile 2002; Colombia 2005; Costa Rica 2000 and 2011; Dominican Republic 2002 and 2010; Ecuador 2001 and 2010; El Salvador 2007; Haiti 2003; Jamaica 2001; Mexico 2000 and 2010; Panama 2000 and 2010; Paraguay 2002; Trinidad and Tobago 2000 and 2011; Uruguay 2006 and 2011; and Venezuela 2001.

## **Education and health measures**

The variable selected for education is the maximum level of education attained, called *edattain* in the IPUMS samples. This variable is harmonized by the IPUMS team, who explain that *edattain* is an attempt to merge samples that provide either degrees, actual years of schooling, and those that have some of both into a single, roughly comparable variable. The variable is categorized by: Less than primary completed, Primary completed, Secondary completed, and Tertiary completed.

We used a dichotomous indicator of self-reported disability as the health measure; this is the only personal health variable that is widely available in the census samples. However, measurements of prevalence of disability in an internationally comparable way is still a developing goal<sup>30</sup> of the *World Report on Disability*<sup>31</sup>. Nevertheless, there is some consensus in the use of functionality questions regarding core activities<sup>32</sup>, which are the kind of questions included in our census samples. The variable *Disabled* in the IPUMS samples indicates whether the person reported at least one disability of any kind. In the census samples where the disability variables provide several degrees of difficulty, disabled applies the threshold of “significant” or “severe” difficulty to define disability. In the case of the Brazil 2000 census, for example, a person is coded “disabled” if they reported the loss of use of a limb, hand, or foot; had a mental disability; or if they reported a “significant permanent difficulty” in seeing, hearing, or walking. In the 2010 census, a person is coded “disabled” if they reported significant difficulty seeing, hearing or walking or if they reported having a permanent mental or intellectual disability. Both censuses, nevertheless, are fairly coherent regarding age-specific disability rates<sup>33</sup>.

It is important to mention that the definition of disability changes to some degree across samples. Even though our focus is on the differences between disabled and able-bodied women rather than on the level of disability, it is necessary to address the influence of international heterogeneity on the censuses’ disability questions. Two analyses were conducted: First, we explored whether samples with comparatively low or high prevalence of disability show different results, as the prevalence of disability itself may capture some of the heterogeneity in the definition, and found no substantial difference in the results. Second, we checked whether our results for the entire country were equally visible for each region of the country, as in this case the disability measure is constant across regions. We found that subnational figures mirror the national ones.

## **Methods**

In our descriptive study, we computed the childless rate among disabled and able-bodied women across schooling levels. We initially conducted the analysis at the national level, and then at a subnational level; this was done using the “geographical region” variable, available in 18 out of 23 census samples in our study.

We also used the IPUMS microdata to perform a linear regression analysis of childlessness (the dependent variable) on the interaction between education and disability (the key dependent variable) plus education, disability, sample, and dummies.

## **Results**

The Supplementary Material ([http://cadernos.ensp.fiocruz.br/static//arquivo/suppl-e00248919\\_6031.pdf](http://cadernos.ensp.fiocruz.br/static//arquivo/suppl-e00248919_6031.pdf)) contains the relevant data for the following analysis and shows the simple means across samples by educational group.

Table 1 shows that, in line with the results from European countries discussed above, in Latin American countries the childless rate in the lower schooling group is slightly higher than the rate in the average schooling group. Out of the 23 census samples in our study, only five samples did not show higher childlessness rates for the lower schooling group as compared to the average schooling group (Brazil 2000, Ecuador 2001, Haiti 2003, Mexico 2000 and Paraguay 2002). The disability rates on Table 1, on the other hand, follow the well-known health-to-education gradient.

**Table 1**

Mean \* disability and childless rate by education level.

Education group	Disability rate (%)	Childless rate (%)	Proportion of women (%) **
Low	8.5	7.4	28.7
Average	5.4	6.4	37.2
High	3.9	11.6	21.5
Very high	3.4	15.6	12.2

Source: prepared by the authors.

Note: includes women in the 40-50-year-old range in 23 IPUMS census samples from Latin America.

\* Mean across census samples;

\*\* Due to the mean calculation, this does not add up to 100%.

Next, we computed the childlessness rate for each sample by self-reported disability status and schooling level. We also computed the proportion of women that belonged to each schooling level, as lower schooling level might not easily be linked to poverty when it comprises a large proportion of women; Table 1 shows that the average proportion of women in the lower schooling level is 28.7%, but this masks a high heterogeneity in this proportion. Figure 1 shows the results.

Each point in Figure 1 represents the childlessness rate of a given schooling and disability group for each sample. For example, the sample from the 2005 Colombian census (labeled “C2005” in Figure 1) shows a gap of about 10% in the lower schooling group, moving to a gap of about 1% in the higher schooling group.

Figure 1 shows that the lowest childlessness rates are found in the average schooling group. Figure 1 also shows that the childless gap between disabled and able-bodied women in the 40-50 age range is much clearer in the lower schooling group, especially if this group comprises 30% or less of the population. As such, the childlessness-health association appears stronger in the lower schooling group.

At the aggregated level, the childlessness rate is very similar between disabled and able-bodied women, except in the lower schooling group, especially when such a group comprises a small percentage of the population (and thus lower schooling is close to a measure of poverty). We then conducted a regression analysis.

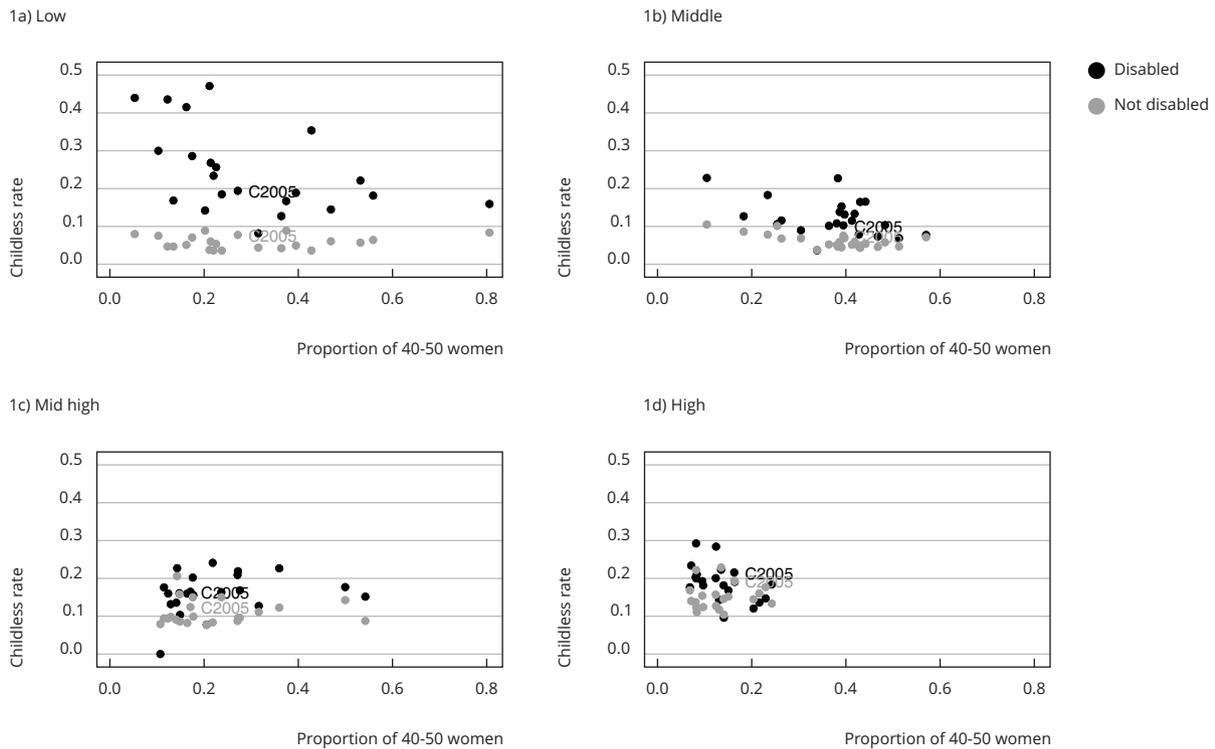
Results in Table 2 show that for women with lower schooling level, the childlessness rate is 19% higher among disabled women. For women with average or high schooling levels, that gap decreases to 5% (i.e., 19% minus 14%). For women with very high schooling level, it decreases further to 3% (i.e., 19% minus 16%). Controlling for the share of women in each level of education did not significantly alter the results. The regression analysis, then, confirms the results from Figure 1.

As census disability measures are not easily comparable across countries, we then focus on the regions within a country. One advantage of using census samples is that the same definition of disability is used across the whole country. We then separately analyzed each country in our sample. Figure 2 shows the results for the Brazil 2010 census.

In general, the childlessness rates across regions in the Brazil 2010 census are higher for women with higher schooling levels; however, the same pattern is not true for the group of women with lower schooling levels. From there, we confirm our results: the childlessness gap between disabled and able-bodied women in the 40-50 age range is much clearer in the lower schooling group. Among the 18 census samples in our study that include information on the geographic region of the respondent, four show unclear results while 14 (including Brazil 2010) show the same framework as Figure 1.

**Figure 1**

Census samples: childless rate by disability status and education.



Source: prepared by the authors.

Note: includes women in the 40-50-year-old range in 23 IPUMS census samples from Latin America, including Brazil 2000, Brazil 2010, Chile 2002, Colombia 2005, Costa Rica 2000, Costa Rica 2011, Dominican Republic 2002, Dominican Republic 2010, Ecuador 2001, Ecuador 2010, El Salvador 2007, Haiti 2003, Jamaica 2001, México 2000, México 2010, Panamá 2000, Panamá 2010, Paraguay 2002, Trinidad and Tobago 2000, Trinidad and Tobago 2011, Uruguay 2006, Uruguay 2011 and Venezuela 2001. "C2005" stands for the sample from the 2005 Colombian census.

**Table 2**

Regression analysis on grouped data. Dependent variable: childless rate.

Independent variable	Coefficient	p-value
Disabled & low education	Omitted	
Disabled & middle education	-0.14	0.00
Disabled & high education	-0.14	0.00
Disabled & very high education	-0.16	0.00
Disabled	0.19	0.00
Low education	Omitted	
Middle education	0.00	0.63
High education	0.06	0.00
Very high education	0.10	0.00
Year, country dummies	Yes	
Observations *	184	
R-square	0.65	

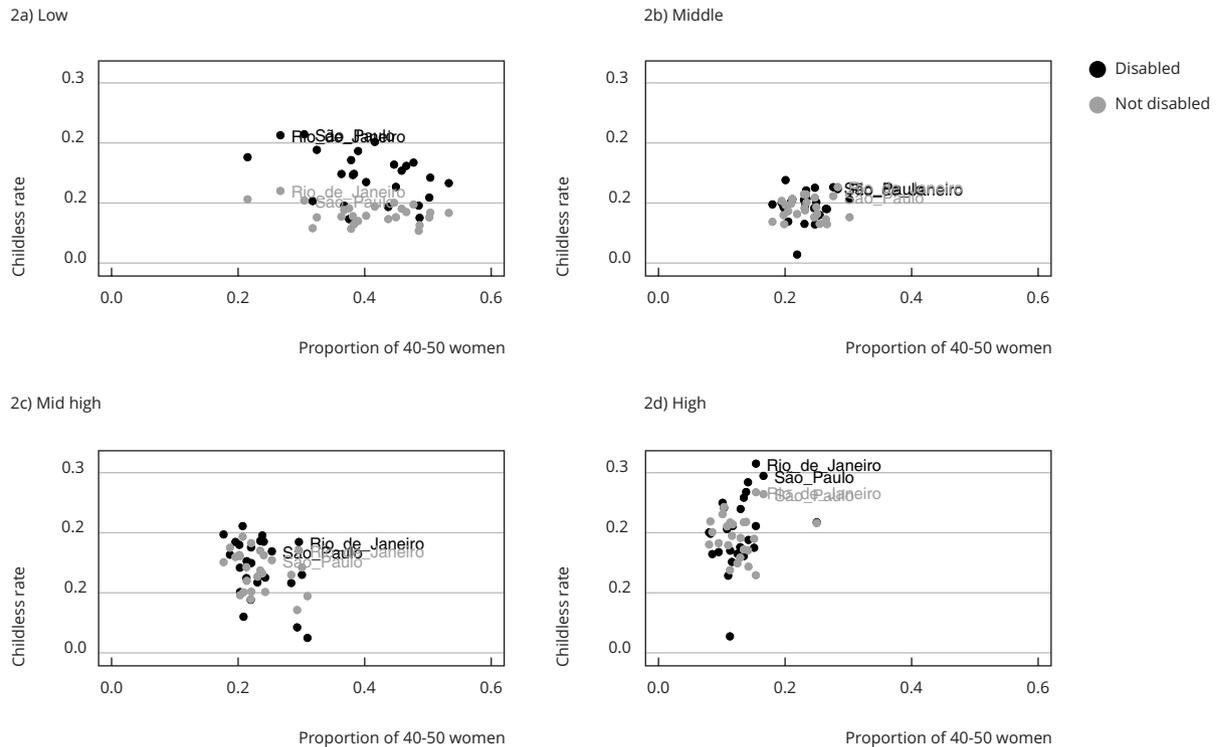
Source: prepared by the authors.

Note: includes women in the 40-50-year-old range in 23 IPUMS census samples from Latin America.

\* Each sample-disability status-education level is an observation.

**Figure 2**

Regions in the Brazil 2010 census: childless rate by disability status and education.



Source: prepared by the authors.

Note: includes women in the 40-50-year-old range in 23 IPUMS census samples from Brazil, including Rondônia, Acre, Amazonas, Roraima, Pará, Amapá, Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia, Minas Gerais, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, Rio Grande do Sul, Mato Grosso do Sul, Goiás, and Federal District.

## Discussion

There is a well-known association between higher schooling levels and higher childlessness, due to many economic and cultural reasons<sup>10</sup>, as well as other factors like longevity<sup>34,35</sup>.

Because higher schooling is so clearly associated with higher childlessness, we would expect low schooling to be associated with lower childlessness. However, as we discussed from the available literature regarding developed countries, as well as from our analysis of developing countries, lower schooling is commonly associated with higher childlessness.

There is no clear explanation for this finding. The literature on the so-called “voluntary” childlessness covers a wide range of dynamics, from the absolutely conscious and determined childlessness, to the situation of over-postponing and not finding suitable partners<sup>5,36,37,38</sup>. This however does not explain why many women with lower schooling, mostly without careers, are also not having children. Neither the choice perspective, nor the preferences theory<sup>39</sup> offer a simple explanation. One possible hypothesis, from two mainly descriptive studies, is that union formation is lower in women with lower schooling level<sup>12,14</sup>. Another possible explanation is “childless by poverty”<sup>17,18</sup>, where poverty somehow forces women into not having children, with health issues probably representing the main link between poverty and childlessness<sup>17,18</sup>. Indeed, we find that in most countries, and most regions within a country, the childlessness rate of disabled women is similar to that of able-bodied women, except for the group with lower schooling level.

Further longitudinal analyses are necessary to explore the causal dynamics behind the health-poverty-fertility association. In this study, we argue that health is one key variable behind the high childlessness rate observed among women with lower schooling levels; further research could explore the causal relations. In general, the interrelation of health, fertility and poverty is complex and heterogeneous<sup>40,41</sup>, and the mutual causation calls for a comprehensive conceptual approach<sup>8,9,42</sup>. For example, although no clear causal links from childlessness to health among reproductive-age women are found in the literature, it is possible that childlessness might cause poverty and thus poor health. Childlessness in some social contexts can have social and psychological consequences, especially in developing countries<sup>43,44</sup>; one may conclude that these social consequences could lead to poverty. Lastly, childlessness can have direct economic consequences in some poor areas<sup>40</sup>, even in developed countries like the United States; several studies argue that tax reliefs for less affluent mothers can cause relative poverty among less affluent childless women.

A limitation of our study is the international comparability of the censuses' self-reported disability measure. However, we explored whether samples with comparatively low or high prevalence of disability produce different results and found no substantial difference. Furthermore, we verified that our results were equally visible across regions within a country. Likewise, if women with lower schooling levels were more likely to overstate their self-reported disability, that would attenuate the childlessness gap between disabled and able-bodied women in that group; as such, this would attenuate our results rather than reinforce them.

## Contributors

All the formulation of the data analysis, the analysis of results and the discussion was done by the two authors together. The writing of the manuscript was done by R. Castro, while revision was done by J. Tapia.

## Additional informations

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## Resumen

*La literatura reciente propone que la pobreza puede llevar a las mujeres a decidir no tener hijos, por lo que se atenúa o revierte la fertilidad, típicamente más alta, observada entre mujeres con formación educativa baja. Investigamos el papel de la salud en este planteamiento: ¿Tiene la salud un efecto distinto en la fertilidad entre mujeres con baja educación? Para tal fin, calculamos la brecha en la tasa de mujeres sin hijos según el estado de discapacidad autoinformado y nivel de educación. Debido a la escasez de datos sobre mujeres sin hijos en las encuestas, además del tamaño pequeño de las muestras, usamos muestras del censo. Centrándonos en mujeres con un intervalo de edad entre 40 y 50 años, y usando 23 muestras de censos de países latinoamericanos (2000-2011), hallamos que solo en el grupo con baja educación hay una clara brecha en la tasa de mujeres sin hijos según estado de discapacidad autoinformado. Desde nuestro análisis descriptivo concluimos que la salud puede jugar de hecho un papel influyente en la ausencia de hijos por el enfoque de pobreza.*

*Fertilidad; Educación; Pobreza*

## Resumo

*A literatura recente sugere que a pobreza pode fazer com que as mulheres permaneçam sem filhos, assim atenuando ou revertendo as taxas de fertilidade mais elevadas observadas tipicamente em mulheres com baixa escolaridade. O estudo investiga o papel da saúde nessa abordagem: A saúde tem efeito negativo discernível na fertilidade de mulheres com baixa escolaridade? Para responder a essa pergunta, calculamos a diferença na taxa de ausência definitiva de filhos de acordo com a infertilidade autorrelatada, entre diferentes níveis de escolaridade. Devido à escassez de dados sobre mulheres definitivamente sem filhos, além das amostras pequenas, utilizamos amostras censitárias. Com foco nas mulheres na faixa etária entre 40 e 50 anos, e utilizando 23 amostras censitárias de países latino-americanos (2000-2011), detectamos que apenas no grupo de baixa escolaridade, há uma defasagem clara na taxa de ausência definitiva de filhos de acordo com a infertilidade autorrelatada. Com base em nossa análise descritiva, concluímos que a saúde pode desempenhar um papel importante na análise da ausência de filhos em mulheres pobres.*

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