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National Abortion Survey 2016

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Abstract *We present the results of the Brazilian National Abortion Survey of 2016 (2016 PNA) and compare them to those obtained in the 2010 PNA as per the profile of women and the magnitude of abortion. The PNA is based on a random sample that combines ballot-box questionnaires with face-to-face interviews with women ages 18 to 39 in urban areas of Brazil. The results show that abortion is a common and persistent occurrence among women of all social classes, racial groups, educational levels, and religions: in 2016, almost 1 in every 5 women had undergone at least one abortion by the age of 40. In 2015, approximately 416,000 women had an abortion. There is, however, heterogeneity among the social groups, with abortions being more frequent among women of lower educational levels, women who are Black, Brown and Indigenous, and women living in the North, Northeastern and Mid-western regions of the country. In line with the 2010 PNA, half of all women took medicine to abort and almost half of them were hospitalized to complete the abortion.*

Key words *Induced abortion, National Abortion Survey, Reproductive Experiences, Ballot-box technique, Brazil*

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Introduction

Previous estimates have shown that abortion is a common event in the reproductive lives of Brazilian women. The National Abortion Survey of 2010 (2010 PNA) found that, by the age of 40, almost one in five literate women in urban areas in Brazil has had at least one abortion[1]. The 2010 PNA used the ballot-box technique to ensure the anonymity of women interviewed and to reduce the rate of false responses or non-responses resulting from abortion stigma and the fear of being reported to the authorities[2].

This article presents the results of the National Abortion Survey of 2016 (2016 PNA), the main objective of which was to estimate the magnitude of abortion in Brazil. The 2016 PNA is a household survey that combines face-to-face interviews conducted by woman interviewers with the ballot-box technique and thus has advantages over surveys that rely entirely on direct interviews. The study was designed in such a way so that its results were comparable to those of the 2010 PNA.

Methodology

The 2016 PNA is a household survey based on a representative random sample of the total population of literate women in Brazil ages 18 to 39. It includes small municipalities (less than 20,000 inhabitants), but it is limited to the urban area of these municipalities. The population represented corresponds to about 83% of the Brazilian female population in this age group. The survey was carried out between June 2 and 9 of 2016. It consists of the combination of a questionnaire based on the ballot-box technique and a face-to-face questionnaire applied only by woman interviewers. The ballot-box technique has been used since the 1990s to measure the magnitude of abortion in Brazil[1,3,4].

The ballot-box technique consists of giving participants a paper questionnaire with questions on controversial subjects –for example, whether or not one has ever undergonean abortion and when - which the participant themselves answer and then deposit in a sealed box, without the interviewers seeing the responses. This ensures not only the secrecy of the responses, but also the perception of secrecy, which tends to increase truthful responses. After completing the questionnaire for the ballot box, the participant responds to a face-to-face questionnaire

with general questions (schooling, marital status, etc.), applied with the use of tablets. The ballot-box questionnairescontained a coded identifier that later allowed the matching of both questionnaires without prejudice to privacy and confidentiality. As in the 2010 PNA, all interviewers for the 2016 PNA were women.

The literature indicates that the ballot-box technique has advantages over direct interviews or other qualitative methodologies. Studies that do not use techniques that guarantee secrecy tend to produce an underestimation of the magnitude of abortion[5-11]. For example, the National Health Survey of 2013 (2013 PNS), which was conducted by the Brazilian Institute of Geography and Statistics (IBGE), obtained data through face-to-face interviews with interviewers of both sexes and concluded that only 2.1% of women between the ages of 18 and 49 - a proportion significantly smaller than that of the 2010 PNA–had had an abortion[12].

The sample was stratified in three stages: in the first stage, the selection of the municipalities by probability proportional to size (PPS) sampling of the literate female population ages 18 to 39, then, in the second stage, formation of conglomerates by census sectors, with PPS selection, and, finally, in the third stage, the selection in each conglomerate of a fixed number of the population controlling the sample with quotas for certain variables (age, level of education, employment status), which were established based on data from IBGE's National Household Sample Survey of 2014 (2014 PNAD).

As the ballot-box technique requires independent reading, the questionnaires were applied only to literate women. Illiterate women were substituted through systematic sampling with replacement. In all, 2,002 women in Brazil were interviewed. The sample was designed to produce a margin of error of plus or minus 2 percentage points for the national results, considering a 95% confidence interval. To ensure maximum comparability, the 2016 PNA shares several features with the 2010 PNA, such as sample design and interview techniques and questionnaires, except for the addition of some questions to the 2016 PNA. The comparisons are based on tabulations made from the microdata of the 2010 and 2016 PNAs.

During the fieldwork, no relevant intercurrences were identified that could bias the aggregated results. All the interviews were submitted to a logical consistency test. At least 20% of the interviews were verified and analyzed by a team

of independent auditors. To ensure impartiality, the data collection was performed by an independent institution (IBOPE Inteligencia), which will keep the original data collection material for at least one year and the study results (processing, reports, etc.) for at least two years, as determined by the requirements of ISO 20252. The research project was submitted to the Research Ethics Committee at the University of Brasilia's Institute of Human Sciences and approved in accordance with the guidelines of the National Health Council. The women provided oral consent to participate, in order to avoid risks related to the fact that abortion is a crime the country.

Results and Discussion

Unless otherwise noted, "women" refers to the subpopulation of women in Brazil in 2016 who are literate, ages 18 to 39, and live in the urban areas of municipalities. In the case of comparisons with the 2010 PNA, the population has the same characteristics. The results in parentheses refer to the numbers of absolute cases. Except where indicated, the proportions refer to cases with valid answers, that is, they do not account for non-responses. When non-responses occurred, the absolute values are indicated immediately afterwards.

Abortion is a common occurrence among Brazilian women. Of the 2,002 literate women between 18 and 39 years old who were interviewed for the 2016 PNA, 13% (251) had at least one abortion. Considering confidence intervals, this is a similar proportion to the 2010 PNA (15%). The small divergence is not relevant and may derive from random factors and is within the margin of error. Because the question is about ever having had an abortion, the rates tend to be higher among older women. Among women 35 to 39 years old, 18% ever had an abortion. By approximation, it is possible to say that in 2016, by the age of 40, one in five women had ever had an abortion.

However, as a cumulative event, it is not possible to say that abortion was more common in the past based on this data. In fact, the evidence points towards a reasonable stability when considering the effects of cohort movement over the six years between the two PNAs. Most variations in rates, according to the five-year bands, may be associated with cohort movement, that is, the accumulation of abortions during the reproductive years.

As might be expected, most abortions occur during women's most intense period of reproductive activity. However, there is a greater frequency of the last abortion having occurred among young women, with 29% (73) of abortions occurring at ages ranging from 12 to 19 years, 28% (70) from 20 to 24 years, and then dropping to less than 13% (32) among women 25 and up. A similar pattern was observed in the 2010 PNA. What should be emphasized is that this information refers to the last abortion and therefore may have some bias upwards amongst women who have had more than one abortion and, more importantly, the rates of non-responses for this question were high in both surveys: 15% in 2010 and 18% in 2016.

About 11% (27) of the abortions in Brazil were performed in 2015, which is equivalent to saying that 1% of women in the 2016 PNA had an abortion that year. The remaining 89% (220) had abortion before or after 2015, or at an unknown time as four women who had had abortions did not respond to the question about when. The question was not asked in the 2010 PNA and, therefore, no comparison is possible. In the 2014 PNAD, the number of literate women ages18 to 39 on September 27, 2014 in urban Brazil was 30,845,065. This corresponds to 83% of Brazilian women. Multiplying by the abortion rates obtained in the 2016 PNA (more precisely, 12.54% at any time and 1.35% in 2015), the number of urban literate women ages 18 to 39 who, by 2014, had had at least one abortion would be about 3.9 million. By approximation, the number of those women who had abortions in 2014 would be 416,000.

Producing an estimate for the whole of Brazil requires extrapolation. There are problems in extrapolating these results to groups outside the study universe, so the estimates below for the total female population must be taken with extreme caution. The survey was limited to interviewing literate women from urban areas. The quality of extrapolation, however, depends on the hypothesis, which may not be correct, that abortion rates among non-surveyed women are the same as among those surveyed. It is not known to what extent the abortion rates of illiterate women and rural area women differ from those observed in the 2016 PNA. Evidence in this regard is ambiguous. On the one hand, abortion rates are higher in municipalities with more than 100,000 inhabitants (13%) than in those with less than 20,000 (11%), which suggests lower rates in rural areas; on the other hand, abortion

rates are much higher among women with low levels of schooling, that is, up to the fourth grade (22%), than among women with higher levels of schooling (11%), indicating that abortion rates are probably higher among illiterate women.

In 2016, the estimated total number of women in Brazil ages 18 to 39, including those living in rural areas, was 37,287,746. Extrapolating from abortion rates among urban literate women (13%), the number of women who, by 2016, have had at least one abortion would therefore be around 4.7 million. Applying the abortion rate from the previous year, the estimated number of women who had an abortion in 2015 would be approximately 503,000.

Half of the women used medication to abort. Abortion was performed with medications in 48% (115) of the valid cases. The same proportion was found in 2010 (48%). If we also considered the 4% (10) non-valid answers, or non-responses, to the question, the proportion would still be close: 46%. The main medication used in Brazil is misoprostol[13], which is recommended by the World Health Organization for safe abortion. The 2016 PNA, however, did not investigate which medication women used to carry out abortions.

About half of the women had to be hospitalized to complete an abortion: 48% (115) of the women were admitted during their most recent abortion. The proportion drops to 46% if we consider the 3% (10) non-responses. Even taking into account the confidence intervals of 2 percentage points, there was a fall in hospitalizations between 2010 (55%) and 2016 (48%). Two-thirds (67%, 18) of women who confirmed having aborted in 2015 (27) were hospitalized to complete the abortion.

This proportion differs from the one presumed in different scenarios used to estimate the annual number of abortions by indirect methods[14-17]. That measurement is based on the official number of women hospitalized in the public health network for abortion complications, with correction factors applied to estimate the number of induced abortions. These estimates use scenarios in which 16%, 20%, or 28% of women who had an abortion required hospitalization for complications, multiplying 6, 5, or 3.5 by the number of admissions for abortion. Nonetheless, the 2016 PNA provides, as mentioned above, a direct estimate of the number of abortions in 2015, 1.4% of the female population (18 to 39 years old, urban and literate), and extrapolation is necessary for the illiterate, rural population and other age groups.

The estimation by indirect methods, based on hospital admissions due to abortion complications, concluded that there was a tendency toward a decline in the rate of unsafe abortions in Brazil between 1996 and 2012[17]. This could be associated with three factors: a reduction in the number of abortions, a reduction in the need for hospitalization to treat abortion complications, or a continued fear among women to seek out health services because of the risk of being reported to the authorities or stigma. Comparison of the PNAs shows that the abortion rate remains stable, but admissions have become less frequent.

Table 1 presents the characteristics of women who had abortions. It is possible to see that abortion in Brazil is common and occurs frequently among ordinary women, that is, abortion is undergone by women: a) of all ages (that is, it remains a frequent event in the reproductive life of women for many decades) b) who are married or not; c) who are currently mothers; d) of all religions, including those without religion; e) of all educational levels; f) who are employed or not; g) of all social classes; h) of all racial groups; i) in all regions of the country; and j) in municipalities of all types and sizes.

There was no significant change between 2010 and 2016. Abortion rates according to characteristics of women are similar in the two PNAs, especially when considering sample margin errors. This indicates two points. First, that the results are plausible and not an artifact of the research. Second, that the structure of social determinants of abortion is stable, that is, the determinants are population characteristics that do not vary much. Abortion may be associated with an individual reproductive event, but abortion practice is rooted in the reproductive life of women and reflects the way in which Brazilian society organizes itself for biological and social reproduction.

That said, abortion rates are not uniform across sub-groups. Rates are, for example, higher among women in the North / Central-West and Northeast regions (15% and 18%) than in the Southeast and South regions (11% and 6%), higher in capitals (16%) than in non-metropolitan areas (11%), higher among women with schooling only up to the fourth/fifth grade (22%) than among women with college education (11%), higher among women with lower family incomes (up to 1 minimum wage - 16%) than among women with higher family incomes (more than 5 times the minimum wage - 8%), higher among Asian, Black, Brown, and Indige-

Table 1. Abortion rates, by characteristics of women, Brazil, 2010 and 2016.

Year	2010			2016		
Induced an abortion	**% Yes**	**Yes**	**Total**	**% Yes**	**Yes**	**Total**
Age at last abortion	..	296	..	..	251	..
12 to 15 years	..	13	..	..	19	..
16 and 17 years	..	37	..	..	26	..
18 e 19 years	..	46	..	..	28	..
20 to 24 years	..	77	..	..	70	..
25 to 29 years	..	55	..	..	32	..
30 to 34 years	..	21	..	..	24	..
35 to 39 years	..	4	..	..	8	..
Does not know/ No response	..	43	..	..	44	..
Color/Race	...	...	...	13%	251	2002
White	...	...	...	9%	58	676
Black	...	...	...	15%	49	322
Brown (Mixed)	...	...	...	14%	129	912
Yellow (Orientals)	...	...	...	13%	8	63
Native (Indigenous)	...	...	...	24%	7	29
No response	...	...	...	0%	-	-
Age at interview	15%	296	2002	13%	251	2002
18 to 19 years	6%	11	191	9%	17	188
20 to 24 years	7%	36	483	9%	38	445
25 to 29 years	17%	84	488	11%	50	442
30 to 34 years	17%	79	452	14%	64	461
35 to 39 years	22%	86	388	18%	82	466
Had children	15%	296	2002	13%	251	2002
Yes	19%	240	1289	15%	196	1278
No	8%	56	713	8%	55	722
No response	0%	-	-	0%	-	2
Current marital status	15%	296	2002	13%	251	2002
Married/ stable union	16%	188	1140	14%	163	1169
Single	12%	91	770	9%	63	725
Separated/ widow	19%	17	91	23%	25	108
No response	0%	-	1	0%	-	-
Religion	15%	296	2002	13%	251	2002
Catholics	15%	175	1168	13%	141	1060
Evang. / prot./ non-cathol. crhistian	13%	72	552	10%	63	607
Other	16%	13	80	16%	18	113
No religion/ atheist	18%	35	198	13%	27	209
No response	25%	1	4	15%	2	13
Schooling	15%	296	2002	13%	251	2002
0 to 4 years	23%	44	191	22%	25	112
5 to 8 years	19%	80	429	16%	54	334
9 to12 years (high school, incompl.)	12%	115	974	11%	114	1007
13 and up (university, incompl.)	14%	57	408	11%	58	549
Employment status	15%	296	2002	13%	251	2002
Working	14%	179	1260	12%	150	1275
Not working	16%	117	742	14%	101	727

it continues

Table 1. continuation

Year	2010			2016		
Induced an abortion	% Yes	Yes	Total	% Yes	Yes	Total
Family income (in Min. wages)	15%	296	2002	13%	251	2002
Up to 1 Min. wage	17%	69	402	16%	70	442
1 to 2 Min. wages	16%	92	566	13%	90	696
2 to 5 Min. wages	13%	103	793	10%	61	581
More than 5 Min. wages	14%	26	184	8%	16	199
No response	11%	6	57	17%	14	84
Region	15%	296	2002	13%	251	2002
North/ Central-east	19%	59	308	15%	49	336
Northeaset	20%	102	504	18%	88	490
Southeast	12%	110	910	11%	96	896
South	9%	25	280	6%	18	280
Type of municipality	15%	296	2002	13%	251	2002
Capital	21%	138	644	16%	100	637
Metropolitan region	10%	30	294	12%	35	287
Non-metropolitan	12%	128	1064	11%	116	1078
Size of municipality	15%	296	2002	13%	251	2002
Up to 20,000 inhabitants	11%	25	238	11%	24	210
From 20,000 to 100,000 inhab.	12%	58	469	11%	44	413
More than 100,000 inhab.	16%	213	1295	13%	183	1379

Source: PNA 2010 e PNA 2016.
Note: information about race and age at last abortion not collected in 2010.

nous women(13% to 25%) than among White women (9%), higher among currently separated or widowed women (23%) than those married or in a stable union (14%), and higher among those women who have children (15%) than among those who have never had children (8%). Subject to some variations, this is a pattern similar to that observed in 2010.

It should be noted that these groupings do not reflect the situation of women at the time of their abortions, but at the time of the study. Everything that can vary throughout the life cycle of a woman therefore influences the results. Marital status and having children, for example, are characteristics that are more subject to variation. Geographic location and income vary less, education stabilizes in adulthood, and race can be understood as a permanent feature. In addition, some subgroups are small in size - such as Indigenous and Asian - and this may end up producing disparate rates compared to those obtained in large subgroups.

Conclusions

Face-to-face interviewing underestimates the number of abortions undergone by women; it remains to be seen, however, whether the ballot-box technique also underestimates abortions. There areno clear indications whether this underestimation is relevant. On the contrary, the stability of the results over time suggests that the ballot-box technique accurately identifies the magnitude of abortions, holding aside, of course, the existence of systematic and persistent bias that may affect responses. If there is such a bias effect, the number of abortions in the country would be even greater than estimated by the 2016 PNA.

This allows us to say that abortion is common in Brazil. The number of women who report having had an abortion is compelling: in approximate terms, by the age of 40, one in five Brazilian women has had an abortion; in 2015, there were approximately half a million abortions. Considering that a large number of abortions are illegal and, therefore, performed without proper health

and safety measures, these numbers indisputably make abortion one of the biggest public health problems in Brazil. The State, however, is negligent on the issue, failing to acknowledge the issue in its public policies or to take clear measures to address the problem.

The frequency of abortions is high and, judging by the data from different age groups of women, it has remained so for many years. Between the 2010 PNA and the 2016 PNA, for example, the proportion of women who had at least one abortion remained virtually unchanged. That is, abortion is a notable public health problem not only because of its magnitude, but also because of its persistence. Brazilian public policies, including health policies, treat abortion from a religious and moral perspective and respond with criminalization and police repression. Judging from the persistently high magnitude of abortion, and the fact that abortion is common among women of all social groups, the criminalization and repression-based response has proved to be not only ineffective but also harmful. It does not reduce nor support: on the one hand, this type of response is not able to reduce the number of abortions and, on the other hand, it prevents women from seeking the necessary health information and follow-up to ensure that the abortion is performed safely or that she can plan her reproductive life so as to avoid another abortion.

Half of Brazilian women aborted using medication. As the most common abortion medication is misoprostol (best known by its commercial name Citotec®), precisely the medication that the World Health Organization recommends for safe abortions, it is probable that mortality due to abortion complications is less than in previous decades. There are still, however, other important health risks, which can be seen in the fact that half of the women who had aborted had to be hospitalized to complete the abortion, as well as effects not explored in the PNA, such as the effects on mental health. The comparison between 2010 and 2016 indicates that hospitalization has been declining, suggesting that, in spite of the illegality and repression, women are increasingly using safer methods for abortion.

Contrary to the stereotypes, the women who have abortions are ordinary women. Abortion is common during adolescence, but it also occurs very frequently among young adults. These are women who are already or will become mothers, women who are wives and workers in all regions of Brazil, and women of all levels of education who belong to all of the country's social classes, racial groups, and main religions. This is not to say, however, that abortion occurs in a homogeneous way across all social groups. There are differences that merit additional attention and analysis, in particular the higher rates among women of low schooling and income, among Black, Brown and Indigenous women, and the significant regional differences. In addition, it is worth mentioning that, because of limitations with the ballot-box questionnaires, the PNA identifies the characteristics of the women at the time of the interviews, but it is not able to provide a profile of women at the time of their abortions.

Collaborations

D Diniz, M Medeiros and A Madeiro participated equally in all stages of preparation of the article.

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