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# The use of misoprostol in the termination of pregnancy: a review of studies carried

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**Abstract** *The use of misoprostol for abortifacient purposes is a phenomenon observed in Brazil since the late 1980s. The drug started to be used at that time for self-induced abortion, when it began to be commercialized for the treatment of peptic ulcer. Its access was restricted from 1998 onwards, but the drug continues to be commercialized illegally. The objective of this article is to summarize the knowledge produced by research in Brazil about induced abortion and the use of misoprostol. An integrative review of original studies carried out in Brazil and published in journals indexed in SciELO, PubMed and Lilacs databases was performed. The search found 68 titles, and 28 articles were included in the review. Most women who induced pregnancy interruption were young and did it before 15 gestational weeks. The rate of misoprostol use ranged from 89% to 36%. This drug is effective for terminating pregnancy in the first trimester and has a low rate of complications. However, the more socially vulnerable the woman is, the greater are the health risks in the abortion process. The conclusion is that the purchase of misoprostol as an abortifacient is facilitated, despite it being prohibited, and its complications are associated with the context of vulnerability of the pregnant woman.*

**Key words** *Abortion, Misoprostol, Abortifacient agents*

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## Introduction

The use of misoprostol for abortifacient purposes is a phenomenon observed in Brazil since the late 1980s. Due to the context of illegality of abortion in the country, included in the penal code in 1830 and reaffirmed in the penal codes of 1890 and 1940, misoprostol started to be used as an alternative for self-induction of abortion, even though its commercialization was authorized for the treatment of peptic ulcer[1].

As the drug is a prostaglandin, it is contraindicated for pregnant women because it induces uterine contractions due to its uterotonic action. The knowledge of this collateral effect rapidly spread and between 1986 and 1998 the drug was commercialized in pharmacies to women who wished to interrupt pregnancy. In 1998, its commercialization was forbidden[2]. Despite the prohibition, the commercialization of the drug is made illegally until the present time[3].

Illegality did not cease the practice of abortion, considering that one in every five women until 40 years old has made, at least, one abortion in her reproductive trajectory. Data of a recent study demonstrate that there are annually at least 503 thousand abortions in Brazil, which corresponds to 1,300 women per day[4]. The same research found evidence that 48% of the totality of abortions were made with the use of drugs. Studies on this theme found that the rate of misoprostol use varied from 89% a 36%[5,6].

Women have been using misoprostol for the interruption of pregnancy as one of the options to conduct their decisions about their reproductive life[7]. After the bleeding that results from the use of the drug, half of the women seek hospital care, either to certify the completion of the abortion or for the treatment of complications[4]. The literature points out that the doses of misoprostol used are various, demonstrating a gap regarding the access to information about the dose, the ways of administration, contraindications and the necessary care in the post-abortion[3].

This review study aims to synthesise the knowledge produced by empirical researches in the field of health focused on the interruption of pregnancy with the use of the drug misoprostol, specifically in Brazilian studies. Our intention is to provide subsidies to policies and programmes that contribute to the reduction of risks to women's health. It should be stressed that the search in the literature was performed with the word misoprostol, but this is not the only method used in Brazil for self-induction of abortion; this may represent a bias in relation to other methods that are not the object of this article.

## Method

This is a study of integrative literature review of researches conducted in Brazil and published in periodicals indexed on the databases of SciELO (Scientific Electronic Library Online), PubMed (National Library of Medicine) and LILACS (Latin American and Caribbean Health Sciences Literature). The search was carried out on 14 March 2020 using the descriptors abortion and misoprostol on SciELO; abortion, misoprostol and Brazil on PubMed and LILACS databases. The search found 68 titles. The filter of studies conducted in Brazil was applied due to the authors' interest in analysing the magnitude of the use of the drug for self-induction of abortion in the country, considering that the theme has been investigated since the 1990s.

Of the 68 titles found, 22 duplicates were removed. The remaining 46 titles and abstracts were read and 18 were excluded, according to the criteria: six studied other themes, two were not empirical researches, four were literature reviews, four were researches developed in other countries, one was a title in German, and one study was not found (Figure 1).

The analysis of content of the articles was made by means of the following steps: critical reading and rereading of the texts; search for similarities and divergences; data classification by themes; interpretative synthesis according to the objectives of the study. The articles were classified in five categories: I) sociodemographic and reproductive characteristics of women who interrupted pregnancy; II) abortive trajectory in the context of clandestinity; III) impacts on health of women who interrupt pregnancy; IV) abortive efficacy and teratogenicity of misoprostol; V) misoprostol in the media and the judiciary.

Besides the 28 titles included in the review (Chart 1) and presented in the results, this study added eight articles[1,2,4,33,34,38-40], one doctoral dissertation[32], a book chapter[36], data of the Ministry of Health[35] (MS) on mortality from abortion, and an official document of the MS for the introduction and discussion of the theme under study[40].

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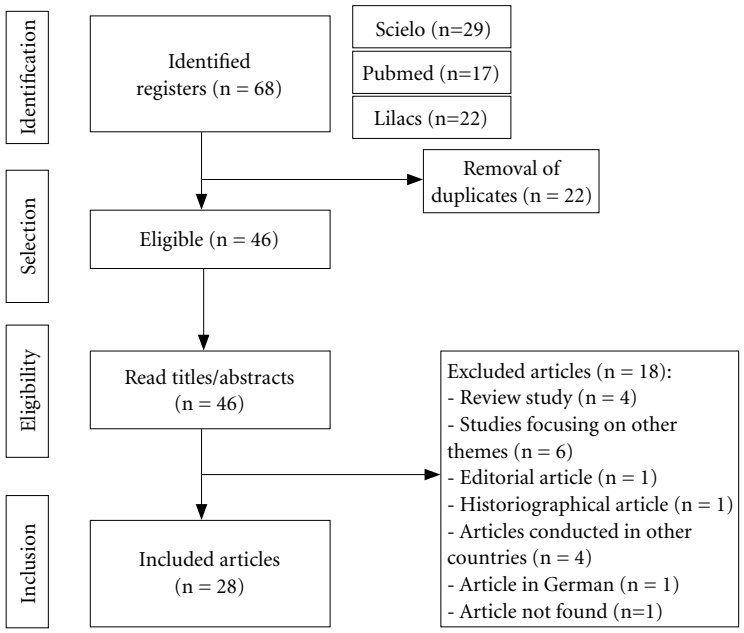


**Figure 1.** Research flowchart.

Source: Authors.

**Chart 1.** Articles included in the review.

| Author/year/ design/place/category | Objectives | Sample | Results/Conclusions |
|---|---|---|---|
| Nader PRA et al. 2007[8]. Quantitative/cross-sectional. Serra/ES. CAT I | Describe the characteristics of abortion in a maternity | 83 hospitalised women | 25.3% of abortions were induced and misoprostol was used in more than 75% of the cases |
| Ramos KS et al. 2010[9]. Quantitative/cross-sectional. Recife/PE. CAT I | Describe the sociodemographic and reproductive characteristics of women hospitalised from abortion | 160 hospitalised women | The prevalent gestational age was lower than 12 weeks; most abortions were possibly induced; and the prevalent age group was between 20 and 29 years |
| Chaves JH et al. 2012[5]. Quantitative/survey. Maceió/AL. CAT I | Describe sociodemographic/ clinical aspects and the type of abortion in adolescents hospitalised in a maternity | 201 hospitalised adolescents | Predominant age group was from 15 to 19 years; 85.98% of abortions occurred between 13th and 15th weeks; and 89.19% referred the use of misoprostol |
| Fonseca W et al. 1998[10]. Quantitative/survey. Florianópolis/SC. CAT I | Investigate sociodemographic and reproductive characteristics of women hospitalised from abortion | 620 hospitalised women | The majority of cases was classified as provoked abortion and used misoprostol, isolated or associated with other methods. Provoked abortion was most frequent in the age group between 20 and 24 years, with education level of five to eight years, and in married women or in a stable relationship |
| Fonseca W et al. 1996[11]. Quantitative/survey. Fortaleza/CE. CAT I | Investigate determinants of abortion in women hospitalised from complications of pregnancy interruption | 4,359 hospitalised women | 48% of abortions were provoked, prevailing age group was between 20 and 29 years, 66% reported the use of misoprostol, isolated or associated to other methods |

it continues

**Chart 1.** Articles included in the review.

| Author/year/ design/place/category | Objectives | Sample | Results/Conclusions |
|---|---|---|---|
| Diniz D et al. 2012[12]. Qualitative/documentary research and interview. CAT V | Analyse the history of women and suppliers of misoprostol denounced to the Public Prosecution Office | 6 police investigations, 4 criminal proceedings and 2 interviews | Cytotec is commercialised in single envelopes, without a pack indicating the laboratory or information about the provenance. There is no guarantee about the quality of the medicament |
| Madeiro AP et al. 2015[13]. Qualitative/interview. Porto Alegre/RS, Teresina/ PI and Belém/PA. CAT II | Describe how female sex workers perform illegal abortion and its consequences for their health | 39 female sex workers | The most common method was misoprostol. Doses were from one to eight tablets, introduced in the vagina and taken orally. Most women presented vaginal bleeding and/or abdominal pain |
| Leal OF. 2012[14]. Qualitative/ ethnography/interview. Rio de Janeiro RJ/Porto Alegre/ RS. CAT II | Establish a discussion about the dissemination of the practice of abortion | 9 women who aborted. 100 men and 100 women in reproductive age | While there is no social recognition of pregnancy, methods are not seen as abortive but rather as a procedure to "get the menstruation down". Despite the moral imperative to assume the child, certain conditions may turn tolerable the practice of abortion |
| Madeiro AP et al. 2012[15]. Quantitative/survey. Teresina/PI. CAT II | Describe the prevalence and the methods used for the interruption of pregnancy and associated factors | 310 women | Most affirmed having practiced at least one abortion in life. "Cytotec" was the most common isolated method and in 9.2% of cases, it was associated with teas and catheter |
| Diniz D et al. 2012[3]. Quantitative/survey. Belém/ PA, Brasília/DF, Porto Alegre/RS, Rio de Janeiro/RJ and Salvador/BA. CAT II | Present women's trajectory to perform illegal abortion | 122 women | The use of teas, liquids and herbs together with oral and vaginal misoprostol was evidenced, most commonly at eight gestational weeks. Half of the women concluded the abortion at a hospital unit |
| Arilha MM. 2012[7]. Qualitative/interview. São Paulo/SP. CAT II | Apprehend elements of the experience of women who wish to perform an abortion | 4 women. 2 used misoprostol. 2 had contact about the commercialization of misoprostol | Misoprostol represents an alternative due to price and safety. Its use places the user in a universe where the limits between legal and illegal are fragile. It circulates beyond health circuits, in the illegal commerce of urban areas |
| Porto RM et al. 2017[16]. Qualitative/interview. Natal/RN. CAT II | Analyse the experiences of women who performed abortion in clandestinity | 2 women | The study demonstrates the difficulty to find misoprostol and the lack of financial resources to buy it. There was also evidence of the difference in the care delivered in health services to women who induce abortion |
| Diniz D et al. 2011[17]. Quantitative and Qualitative/documentary analysis. Brasil. CAT V | Describe the context of illegal abortion from medicaments in the media | 524 news in general | The commercialisation of misoprostol is a focus of police news, with sellers being mostly men. Women who practice abortion have their life story and imprisonment as focus of the news |
| Souza ZCS et al. 2010[18]. Qualitative/Interview. Salvador/BA. CAT II | Analyse the clandestine trajectory of women in situation of provoked abortion | 17 women hospitalised | Abortion induction was made with teas, misoprostol, injection and catheter to dilate the uterus. Gestation was interrupted due to fear of not being able to care for more than one child |
| FERRARI W et al. 2020[19]. Qualitative/interviews. Rio de Janeiro/RJ. CAT II | Discuss specificities of illegal abortion practice among adolescents | 10 female adolescents who practiced abortion | Adolescents' age varied from 12 to 17 years and abortions were made in clinics (inside the favela or outside) or using misoprostol, with financial resources hindrances to perform it |
| Zordo S. 2016[20]. Qualitative/ethnography. Salvador/BA. CAT III | Examine the impact of biomedicalisation of illegal abortion with misoprostol in the perspective of health professionals and poor women | 2 hospitals. 55 health professionals. 20 hospitalised women. 11 women in the community | Distribution of contraceptives in health services is scarce. The effects of biomedicalisation vary according to the social context and despite greater safety using misoprostol for pregnancy interruption, the lack of post-abortion care contributes to greater risk |

it continues

**Chart 1.** Articles included in the review.

| Author/year/ design/place/category | Objectives | Sample | Results/Conclusions |
|---|---|---|---|
| Kale P et al., 2018[21]. Quantitative/cross-sectional. São Paulo/SP, Rio de Janeiro/RJ, Niterói/RJ. CAT III | Analyse maternal obits, abortions, foetal and neonatal obits in maternities, in the cities of São Paulo, Rio de Janeiro and Niterói | 7,845 women hospitalised for birth delivery or abortion and their conceptuses (N=7.898) | One maternal obit occurred. The abortion rate was of 6.3%. Misoprostol was the most common method used to provoke abortion. The proportion of provoked abortion in the city centre of Rio de Janeiro (11.9%) was circa 12 times higher than in the centre of São Paulo (1%) |
| Silva DFO et al. 2010[6]. Quantitative/cross-sectional. Campinas/ SP.CAT III | Evaluate the rate of severe complications from provoked abortion and their relation with the use of misoprostol | 543 hospitalised women | 48% of abortions were classified as possibly, probably or certainly induced. 25 women declared having induced abortion. Of these, 36% used misoprostol. 10% presented haemorrhagic complications and 13% signs of infection |
| Arcanjo FCN et al. 2011[22]. Quantitative/clinical essay. Sobral/CE.CAT IV | Evaluate the efficacy of the use of misoprostol 800mcg vaginal via for uterine emptying in interrupted pregnancies | 41 women | Abortion was completed in 80.5% of women and the others (19.5%) needed uterine curettage. The lower the gestational age, the higher the efficacy of misoprostol in the uterine emptying |
| Bernardi P et al. 2010[23]. Case report. Porto Alegre/ RS. CAT IV | Report the case of a baby-girl born at 7 gestational months, whose mother used misoprostol in the second gestational month | 1 baby-girl at 7 months old | The evaluation of malformations suggests that they may be related to vascular alterations linked to the use of misoprostol; however, this association could be a mere coincidence |
| Opaleye ES et al. 2010[24]. Quantitative/case-control. Fortaleza/CE. CAT IV | Identify in malformed newborns and normal controls, the exposure to misoprostol consequences | 126 cases and 126 controls | There has been exposure to misoprostol during the gestation of malformed newborns compared to the healthy ones (OR=3.65); however, without statistical significance |
| Assis PM 202125. Qualitative and quantitative. Brasil. CAT V | Produce a databank on how Brazilian courts dealt with misoprostol in the past three decades | 331 juridical decisions | In 77.6% of the cases, the crime associated to misoprostol was against public health. The crime of drug traffic corresponded to 9.9% of the cases. Smuggling was cited in 6.9% of the cases. The crime of abortion was associated to misoprostol in 8.4% of the cases |
| Duarte NIG et al. 2018[26]. Qualitative/virtual ethnography. Brasil. CAT II | Analyse narratives about abortion experiences in an online community | 18 narratives | In 13 stories, misoprostol is pointed as the main agent of abortion. The internet is an important source of information about abortion |
| Misago C et al. 1998[27]. Quantitative/cross-sectional. Fortaleza/CE. CAT I | Present findings of medical determinants and characteristics of abortion in women admitted to hospitals | 4,359 hospitalised women | Young women, with more than five years of education and single, presented higher risk of induced abortion. 48% of abortions were certainly induced and 66% used misoprostol for induction. |
| Nunes MD et al. 2012[28]. Quantitative/cross-sectional and qualitative/ interviews. Teresina/PI. CAT II | Characterize methods, trajectory and support networks of adolescents for the interruption of pregnancy | 30 hospitalised adolescents | The majority was less than 18 years old, single, brown or black, and urban. Misoprostol was used in 94% of the cases. The tablets were purchased in pharmacies in 43% of the cases, with prices varying between R$16 and R$60. Three adolescents had severe complications. They sought care by themselves or accompanied by mothers or girlfriends |
| Coelho HL et al. 1994[29]. Quantitative/survey. Fortaleza/CE. CAT I/III | Characterise the experience of a group of women who used misoprostol for abortion induction | 102 women with history of misoprostol use | The majority was aged from 20 to 29 years, single and had less than eight years of education. The majority used four tablets introduced in the vagina and orally. 49 cases needed curettage.13% presented infection and 4% uterine perforation |

it continues

**Chart 1.** Articles included in the review.

| Author/year/ design/place/category | Objectives | Sample | Results/Conclusions |
|---|---|---|---|
| Schuler L et al. 1999[30]. Quantitative/case-control. Porto Alegre/RS, São Paulo/ SP, Rio de Janeiro/RJ. CAT IV | Evaluate and compare the rate and type of congenital defects in pregnant women exposed to misoprostol | 86 control group 82 case group | The study suggests that the use of misoprostol during pregnancy may increase the incidence of congenital anomalies. The magnitude of the increase is low |
| Araujo MCR et al. 2007[31]. Quantitative. Case study. São Luis/MA. CAT I/CAT III | Identify the factors associated to provoked abortion in women admitted to hospital for complications resulting from abortion | 80 hospitalised women | The average age was 21.6 years. 30% completed high school. 71.25% were single. 57.5% had income between one and three minimum wages. 56.25 % used misoprostol for abortion induction. The average period of hospitalisation was 2.5 days |

Source: Authors.

## Results and discussion

Most of the studies was developed with quantitative methods (n = 15), nine investigations used a qualitative approach, three used a combination of qualitative and quantitative methods, and one study is a case report. Of the 15 quantitative studies, 11 were cross-sectional researches, two studies were case control, one was a clinical essay, and one was a case study. Of the nine qualitative investigations, one was conducted using documental research and interviews, one using analysis of narrative, and seven using interviews. Most of the articles was published in the 2010s (n = 19). Five articles are from the 1990s, only two articles were published in the decade of 2000, and two articles in 2020/2021. In relation to the geographic region, the results show that nine investigations were multicentre, 13 were conducted in the Northeast region, four in the Southeast region, and two were conducted in the South region.

### Sociodemographic and reproductive characteristics of women who interrupted pregnancy (Category I)

Six studies were included only in category I and two articles were considered as category I and category III, hence category I totalized eight studies. The investigations made evident that the majority of women who interrupted pregnancy was young[9,10,11,27,29,31] and did the procedure before 15 weeks of pregnancy[5,9]. The identification of induced interruption presented variation between 25% and 94% of the cases studied in the investigations[8,28]. In the present days, it is still not easy to identify the induction of pregnancy interruption, due to the criminalization of abortion in the country.

Ramos et al. (2010)[9], in a study conducted in Recife, state of Pernambuco (PE), with 160 women admitted to hospital with characteristics of abortion until the 20th week, made evident that the majority of them was between 20 and 29 years old (48.9%) and had eight or more years of education (72%). Only ten per cent did not have a partner. Regarding the knowledge of contraceptive methods, the totality of the participants knew the contraceptive pill and the male condom.

Chaves et al. (2012)[5], in a study conducted in Maceió, state of Alagoas (AL), with 201 adolescents admitted to a maternity, corroborate Ramos[9] regarding the gestational age lower than 15 weeks that prevails in cases of provoked abortion. Moreover, provoked abortion happened mostly in adolescents without children and with stable partners. In most cases, the interrupted pregnancy had not been planned.

A study carried out by Fonseca et al. (1998)[10] in Florianópolis, state of Santa Catarina (SC), with 620 women admitted to hospital care with a diagnosis of pregnancy interruption reinforces data found by Ramos[9] regarding the prevalence of age between 20 and 29 years. A research conducted in Fortaleza, state of Ceará (CE), with 4,359 women demonstrated a majority in the same age group[11]. In the study in Florianópolis[10], 53.9% of the women did not use a contraceptive method, whereas 20.6% referred the use of contraceptive pill and 5.7% the use of condom. The motives for not using contraceptive methods among women without a stable partner included: neglect, lack of expectation of having a sexual

relation, and fear of adverse effects. The unavailability of contraceptive methods was mentioned by less than 5% of the interviewees. In the investigation conducted in the Northeast region of Brazil[11] with 4,359 women, the unavailability of contraceptive methods was mentioned by 8% of the participants.

A population research of national scope demonstrated that abortion rates were higher among women with low education level (until the fourth grade) (22%), total family income until one minimum wage (16%), and yellow, black, brown, and indigenous (from 13% to 25%) women, rather than among white women (9%)[4].

When looking into race/ethnicity data, a study conducted in the Northeast region with 2,640 women made evident that "the interruption of pregnancy occurred belatedly among black women (15.4% *vs.* 11.1% among brown and 11.4% among white)" (p. 69)[32].

**Abortive trajectory in the context of clandestinity (Category II)**

The ten studies included in this category evidenced the following phases of the process of abortion with misoprostol: 1) the news of pregnancy; 2) making the decision of abortion; 3) seeking information and establishing bonds; 4) obtaining the drug; 5) using the drug; 6) eliminating and certifying the completion of abortion[33]. The trajectory undergone by women who induced abortion with misoprostol can be exemplified by the course described by Porto and Sousa (2017)[16], in which the medicament was used at home and seeking hospital care happened after the appearance of symptoms related to the drug's effects, such as pain and bleeding.

A study conducted with 122 women in five state capitals of Brazil found some common characteristics in the first abortion: age under 19 years, women with children, and black. Abortion started at home and was concluded at a hospital. Teas, liquids and herbs were used with the purpose of regulating the menstruation. Misoprostol was used in over half of the cases of induced abortion (52%), isolated or in association with teas, liquids and herbs. Curettage in private clinics was made in over a third of the interviewed women (36%). Most of the women was not attended in hospitals (64%)[3], which demonstrates a low search for health services to certify the completion of the abortion.

Another relevant fact regards the ill-treatment received when looking for health services. Moral sanctions, threat of denouncement and long waiting are examples of situations faced. Older women, in general, omitted the induction, with the purpose of protecting themselves from denouncement and ill-treated[20].

The fear of facing this type of situation has been evidenced in a study conducted in the Northeast of the country with 2,640 women, in which the fear reported by black women when seeking care in the post-abortion was referred to by 13% of the participants, more than twice in relation to white women (5.9%)[32].

Another investigation conducted in the Northeast found discriminatory situations undergone by women when seeking assistance. "The nurse made me look at the foetus", recalled in an interview with researchers an adolescent who used misoprostol, and continued, "she insisted with me to see it. I found this terrible."[28] (p. 2316). The authors of this research also indicated that in cases when health professionals notice the abortion induction, there might occur institutional violence, as exemplified in the case of an adolescent:

*[...] was submitted to three uterine curettages without anaesthesia, having been hospitalised for fifteen days. When questioning why there was no anaesthesia, she was informed that her case* did not deserve such a procedure. *In a severe condition, she was referred to Teresina, where she was diagnosed with uterine perforation and infection* [our emphasis] (p. 2316).

In an investigation conducted by Arilha (2012)[7], it was demonstrated that when deciding to make the abortion with misoprostol, factors such as price, safety, preservation of the identity and privacy are taken into consideration, besides the fact of not having to inform personal data to make the abortion in a private clinic. About making the abortion in a private clinic, one participant of the study mentioned: "There are places that are very precarious, it is dangerous…" (p. 1789). However, buying the medicament is not simple, and it counts with the participation of men. Different strategies can be used in the process of purchase and factors such as social networks in which women are inserted and mediators are involved usually influence the outcome. To buy misoprostol it is necessary to know the correct codes, in a place of possible commercialization. Not knowing such a place means that the search for the medicament becomes slow and anguishing. To induce an abortion, it is a race against time, considering that the sooner the abortion is performed, the greater the chances of

it being concluded without complications for the woman[16,22].

It is important to stress that the commercialization of misoprostol in the illegal market, due to its unlawful circulation, can present a wide variation of prices. In a consultation with a supplier in the Southeast region of Brazil, the price of each tablet was R$137.50 in January 2022, plus the delivery fee. The consultation was made by a person who needed the medicament for an abortion in January 2022. The supplier sent the price by WhatsApp message.

**Impacts on health of women who interrupted pregnancy (Category III)**

Three articles were included only in this category, in addition to two studies classified in two categories, I and III. The studies highlighted that the impacts on the health of women who use misoprostol vary according to the social context. In these studies, no obits related to abortion were found.

A research conducted in Salvador, state of Bahia (BA), with twenty women who were assisted at a public maternity revealed that the majority was black and young. Abortion induction began with herbs, which in most cases have no efficacy. Misoprostol was then used in a dosage between one and four tablets, both orally taken and introduced in the vagina. The search for medical care occurred when bleeding and pain became intense. Due to the high price, misoprostol is not always accessible, thus exposing women to less safe methods. A health professional reported that because poverty permeates the lives of people in the region, women act desperately when discovering a pregnancy that they do not want to bring to completion, and therefore use dangerous methods, as for instance the insertion of "chumbinho" in the vagina[20].

Chaves (2012)[5] stresses that abortion is a common practice in women's reproductive lives, regardless of social class, age, religion and marital status. However, the availability of financial resources interferes directly in the risks to which the adolescents submit themselves. Besides, even if the abortion induction is made with misoprostol, high doses might put women's health and lives in danger, due to the risk of uterine rupture[6].

An investigation conducted by Silva et al (2010)[6] in Campinas, state of São Paulo (SP), assessed the complications in women admitted at hospital from abortion (n = 259). The researcher found infectious (10%) and haemorrhagic (13%) complications. No cases were found of severe infection and bleeding that resulted in hysterectomy during the period of the study.

A research conducted in Recife with 1,840 women revealed the rate of 9.5% of infections in pregnancies interrupted until the 24th week and of 23% after the 25th week. In relation to severe infections, the rate was of 1.4% in pregnancies interrupted until the 24th week and of 3.1% after the 25th week. When the rate of complications was compared with the type of abortion and the method used, data demonstrated a rate of 7.9% of infections and 0.9% of severe infections for the cases of spontaneous abortion; 4.2% of infections and 0.8% of severe infections for the cases of abortion induced with misoprostol; and 49.4% of infections and 14.6% of severe infections for the cases induced with other methods. Thus, among women who induced abortion, those who made it with misoprostol presented twelve times lower chance of infection[2].

An investigation conducted in the Northeast of the country with 2,640 women in post-abortion care, identified that black and brown women presented proportions twice as high of regular, severe or very severe conditions, in comparison with white women when arriving at the hospital. Black women reported greater institutional barriers in comparison with brown and white women when seeking post-abortion care[32].

It should also be highlighted that between 2006 and 2015, the obits resulting from abortion were more frequent in the age group between 20-29 years. The maternal mortality ratio (MMR) specific for abortion according to skin colour was higher in black women from 2006 to 2012. In 2013 and 2014, the indigenous women had higher MMR[34].

Considering that there is no specific code for induced abortion in the International Classification of Diseases (ICD-10), this review study extracted from Datasus (Brazilian National Health Information System) the data on obits from indirect forms of abortion, with the selection of cases of non-specified abortion (category O06 of ICD-10), other types of abortion (O05), and failure in the attempt of abortion (O07). Between 2015 and 2019, the obits from these causes in black and brown women (N=135) were more than double the number in relation to white women (n = 70)[35].

Since the beginning of the use of misoprostol for abortion purposes in Brazil, in 1989, women's deaths decreased due to the use of less invasive methods, with a reduction of 83.3% of death

risks between 1990 and 2012, although maternal mortality data are underdiagnosed[34]. However, although the maternal mortality rate from abortion has decreased, it does not mean that the process of abortion has the expected safety, because the studies evidenced situations of precariousness in hospital care after the realization of self-induced abortion. Furthermore, the posture of the State in not recognizing the magnitude of the utilization of medicaments for abortion has sustained the position of not providing an integral care to women who induce abortion.

The General Assembly of the International Federation of Gynaecology and Obstetrics (FIGO) adopted in 2000 the Resolution on Reproductive and Sexual Health as women's rights, affirming that "improvements in women's health need more than better science and health care; they require state action to correct injustices to women"[36].

### Abortive efficacy and teratogenicity of misoprostol (Category IV)

One apprehension about using misoprostol for self-induction of abortion was related to the fear of causing harm to the newborn's health in case of failure in the attempt to abort. There are scarce studies on the abortive efficacy and teratogenicity of misoprostol in Brazil. Four articles were included in this category.

Regarding the abortive efficacy, Arcanjo et al. (2011)[22] conducted a clinical essay with misoprostol for uterine emptying after foetus loss, which presented an efficacy rate of 80.3%. However, the number of participants was relatively small. A meta-analysis conducted by Raymond (2019)[37] concluded that the administration of misoprostol for the interruption of pregnancy in the first trimester was efficacious and presented a low rate of complications. Nevertheless, the authors highlight the importance of monitoring its use to detect failures, besides the need to collect complementary data on the dose and administration route.

Regarding the teratogenicity of misoprostol, two investigations evidenced the possible association of its use to eight cases of congenital malformation[23,24]. Vauzelle et al. (2013)[38] found a rate of around 2% of congenital malformations in newborns and foetuses exposed to misoprostol.

A case report published in Brazil by Bernardi et al. (2010)[23] discusses the disruptive vascular effect caused by misoprostol, which may lead to foetal malformations related to craniofacial structures and in body members. The spectrum of malformations of the report suggests an association with teratogenicity in the period of foetal organogenesis. However, more studies are needed on this issue.

Malformation in newborns occur in 1% to 3% of the general population and any malformation is rare, which hinders the attribution of malformation to a medicament or substance. Children born with Moebius syndrome are thirty times more likely to have been exposed to misoprostol inside the uterus, when compared to newborns with other malformations. Even though the probability is higher than thirty times, Moebius syndrome is rare (one case in every 50 thousand to 100 thousand births), thus there is a low risk of malformation[39].

### Misoprostol in the media and the judiciary (Category V)

Three studies were included in this category. The approach of Brazilian media to misoprostol is mostly related to the apprehension of illegally commercialized medicaments. There has been no identification in journalistic texts of information that misoprostol is considered by the World Health Organization (OMS) as an essential medicament. Physicians perform a double role, at times helping women, at times as agents who denounce them[17]. It is noteworthy that women are the target of the news when the emphasis changes to abortion provoked by medicaments.

In an analysis of six police investigations and four criminal proceedings, Diniz e Madeiro (2012)[12] identified three cases of denouncements against women who induced abortion at home and ended up in a public hospital in the Federal District, demonstrating how a health institution can be a place of threat to women. According to the Technical Norm of the Ministry of Health, "in face of spontaneous or provoked abortion, the physician or any health professional cannot communicate the fact to the authorities –police, judicial, or Public Prosecution Office –because the professional secrecy in the practice of health care is a legal and ethical duty"[40] (p. 14). The study by Diniz e Madeiro (2012)[12] demonstrated the breach of recommendation about secrecy preconized by the Technical Norm, with the violation of the right to secrecy of women who were denounced.

An investigation of 331 court decisions about misoprostol revealed that in 77.6% of the cases, the crime associated to the medicament was

against public health. The crime of drug traffic corresponded to 9.9% of the cases and smuggling was cited in 6.9% of the cases. The crime of abortion was associated to the medicament in 8.4% of the cases[25].

## Final considerations

Abortion is a common event in women who were young, married or single, with gestational age inferior to 15 weeks, but with belated interruption in black women. The use of misoprostol for the interruption of pregnancy was frequent and it was an alternative sought due to price and safety. Around half of the women who used the medicament needed hospitalisation for the completion of the abortion, finding hindrances in obtaining hospital care and undergoing ill-treatment.

It is noteworthy that the use of misoprostol has decreased mortality from abortion in Brazil. However, the induction of abortion with the medicament is a painful and unsafe process for women, especially for those who live in contexts of greater vulnerability, as the young, black and brown, and with low education level. To these aspects should be added gender inequities and the criminalization of abortion.

Misoprostol is an object of journalistic reports and juridical decisions. In the media, the emphasis is mostly related to the illegal commercialization of the medicament and it is a target of police news, with stress on suppliers of the medicament and input apprehension. In the juridical sphere, most of the decisions are categorised as crime against public health.

## Collaborations

LO Machado worked on the conception and research and SR Taquette on the revision and final writing.

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