Subfecundity and infertility in Mexican women

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Abstract

This descriptive study is the first report on the frequency of subfecundity and infertility among the general population of Mexican women. The data came from a national survey conducted in Mexico in 2003. Fifteen percent of the women interviewed had experienced a period of infertility of 12 months or more at some time during their fertile ages; eleven percent of women could be classified as subfecundity and four percent as infertile. The followed treatment seemed to have no influence for the achievement of a full term pregnancy. Women with primary infertility seemed to be the ones more concerned about their problem, especially the youngest.

Key words: fecundity, fertility, sexual life, women, Mexico.

Introduction

The World Health Organization defines infertility as the percentage of women in fertile age (15 to 49 years) who, being at risk of getting pregnant (non-pregnant, sexually active, not contraceptive users and not breast-feeding) report having tried to get pregnant for two or more years (WHO, 2001). However, it is common to find that the reference period is reduced to 12 months or more (Beers and Berkow, 2005; Collins, 2004; National Center for Health Statistics, 2005; National Library of Medicine, 2005). Both
periods have been used for epidemiologic and demographic research (Geelhoed et al., 2002; Templeton et al., 1990; Schrijvers et al., 1991), even though the 12-month period is more relevant for the clinical practice, particularly when it is about women in an advanced fertile age, of 35-year-old or older, for the extended waits can compromise their opportunities to be pregnant (Dunson et al., 2004). Less frequently, longer periods have been considered in some studies (Larsen, 2000; Liu et al., 2005).

The use of different periods makes a difference in the prevalence estimations which can be obtained from the researches (Larsen, 2005; Marchbanks et al., 1989). This is due to the fact that generally a high proportion of women or couples can procreate after 12 months of unprotected sexual intercourse (Dunson et al., 2004); such women or couples are called 'sub-fecund' (Basso and Olsen, 2005). For this reason, the use of a 12-month period as reference normally shows higher than of 24 months prevalence estimations.

Furthermore, a distinction is made between primary infertility, which refers to women or couples who have never have procreated in spite of having cohabitated and being exposed to pregnancy during the reference period, and the secondary infertility, concerning to women or couples who after having procreated, are not able to do it again (WHO, 2001). This difference turns out to be interesting, since in some cases indicates different nature infertility causes (Inhorn, 2003).

Even if the infertility prevalence has social consequences, for instance, when a population reaches very low fecundity rates, its largest importance lies in the effects it has for the women who suffer from it, for they live a "transformation process during which they suffer the loss of their reproductive function and their maternal role… the exclusion valuable social rituals and the privation of the offspring links" (Gonzalez, 2000), such experience "can be devastating for women who want to have children" (Kainz, 2001). It has been found that, compared to those who are fertile, women with infertility present higher depression and anxiety levels and low self esteem, as well as negative effects on their intimate sexual life (Mechanick Breverman, 2004), with their consequences of marital maladjustments and a lesser life quality (Monga et al., 2004). Occasionally, the severity and frequency of these problems makes it advisable to refer them for psychological evaluation (Fido, 2004). The intensity of these problems varies with the cultural characteristics or the family environment, but they are present in any society.
Infertile women are also at a higher risk of having adverse results from subsequent pregnancy or birth to infertile periods, such as a higher abortion frequency or neonatal mortality (Basso and Baird, 2003; Basso and Olsen, 2005).

In Mexico, even though different governmental instances have recognized the importance of the country’s infertility, the studies carried out in this respect are of a clinical character in hospital environments, related to causes and treatment. In the bibliographic revision (PubMed, Popline, Scirus et al) no previous publication was found referring to the prevalence of this problem in the general population of this country.

Two national surveys, in the 1998 and 2000, contain very limited information on the frequency of infertility in Mexican population. A more recent survey the 2003 National Survey on Reproductive Health, (ENSAR 2003; carried out under the coordination of the National Center of Gender Equity and Reproductive Health from the Ministry of Health, is without a doubt the only available source in Mexico to estimate the prevalence of infertility and the characteristics of the women who suffer from it. This source is the one used to develop the present work, which is the first in approaching to the measurement of this problem in Mexico, and to the analysis of the characteristics of those who suffer from it among the general population of this country.

Method

Definitions

In order to identify infertile women it was used the 12-month period, thus the survey information was collected. Those women who achieved a complete pregnancy after having experienced an infertile period of at least 12 months’ length were considered as ‘sub-fecund’. Fertile women were those who have had at least one living child, not having experienced any infertile period.

Generalities of the survey

The survey included 20 925 women in fertile age (15 to 49 years of age), from urban and rural settlements from all over the country and who were selected at probabilistic, multi-phased, and stratified sampling.
Data Analysis

The basic analysis of the present work, in order to identify sub-fecund women as well as the infertile ones, was performed with the following survey questions:

1. Question 5.1 "How old were you when you had your first sexual intercourse?" to select only those who had already had sexual intercourses;
2. Question 6.2 "Have you ever spent more than one year trying to get pregnant without using any contraceptive method?" To initially identify women who had experienced an infertile period at some time in their life;
3. Question 6.3 "The last time this happened, did you want to get pregnant?" in order to select only those women who having had an infertile period really looked forward to get pregnant;
4. Question 6.5 "How often did you have relations at that time?" as an additional criterion to include only those women who had a frequent sexual life ("at least once a week", "frequently" and "very frequently") and so, could be considered as really exposed to risk;
5. Question 6.14 "Finally, did you get pregnant?" which is the final result that allows to distinguish sub-fecund women from the infertile ones, and question 6.15 "the result of that pregnancy was: living child, fetal death, abortion, are you still pregnant?" In this study, this question was used to distinguish sub-fecund women from those who were not able to have a complete pregnancy, and from that point of view they are still infertile. In the sub-fecund category the women who expressed to be pregnant at the time of the interview were included.

Results

General description of the women of the sample

Women from the sample had an average age of 29.7 years (s=9.8 years). The average age at the first sexual intercourse was 18.8 years (s=3.95). 60.8 percent of the women were united, whereas the 31.4 percent were single. 6.9 percent declared to be illiterate; 38.8 percent declared having primary school or less, and 11 percent declared having university studies. 90.9 percent spoke Spanish, 62.2 percent had had at least a living born child and 11.9 percent declared to have had
an abortion, no distinction between natural or induced was made. From the single women interviewed, 18.9 percent said they had already had their first sexual intercourse.

**Sub-fecundity and infertility frequency**

In order to identify sub-fecund and infertile women the procedure shown in Graphic 1 was followed. There the frequencies and the percentages in each stage of the selection can also be observed.

When applying infertility definition for a 12-month period or more, it is observed that 31 percent of the total of the sexually active women (n₁) suffered from infertility at some time in their life (n₂), but this condition is reduced to a slightly less than 20 percent if it is considered that only those who really wanted to become pregnant during that period (n₃), and to an almost 15 percent if only those who declared to have frequent sexual intercourses are included (n₄ in respect to n₁).

However, many of these women succeeded in becoming pregnant after the infertility period (n₅, 80 percent in respect to n₄). But 85 of the latter did not reach a complete pregnancy, so the women who could be eventually identified as sub-fecund (n₆) were 11 percent from the sexually active (n₁), or 76 percent of those who at some time in their life suffered from an infertile period, wanted to become pregnant and had frequent sexual intercourses during that period (n₄).

The level of infertility at the time of surveying was given by the pregnant women from n₇: 516 who had not been able to become pregnant or had not achieved a complete pregnancy (nearly four percent of all the ones who had had a sexual intercourse, n₁). From those, 320 had already had at least a living born child, so it can be considered that they had secondary infertility (62 percent of the infertile women, n₇), whereas the rest had primary infertility (196 or 38 percent of the infertile women, n₇).

Hence, 15 percent of all of the women who had already had sexual intercourses had suffered from an infertile period at least once during their life.
GRAPHIC 1. SELECTION PROCESS FOR THE IDENTIFICATION OF SUBFECUNDAD AND INFERTILE.
NATIONAL SURVEY ON REPRODUCTIVE HEALTH, 2003.

- Total interviewees
  \( n_T = 20,925 \)

- Have had sexual intercourse
  - Yes
    \( n_1 = 14,491 \) (100%)
  - No / na*
    Excluded

- Difficulties to get pregnant
  - Yes
    \( n_2 = 4,528 \) (31.2% / 100%)
  - No / na*
    Excluded

- Wanted to get pregnant
  - Yes
    \( n_3 = 2,862 \) (19.9% / 63.2%)
  - Little / none
    Excluded

- Frequency of sexual relations
  - Frequently**
    \( n_4 = 2,166 \) (14.9% / 47.6% / 100%)

  - na*
    Excluded

- Got pregnant
  - Yes
    \( n_5 = 1,722 \) \( n_7 = 516 \) (3.6% / 11.4% / 23.9%)
  - No
    \( n = 431 \)

- Ended pregnancy
  - Yes / current pregnancy
    \( n_6 = 1,632 \)
  - No
    \( n - 85 \)

* Unavailable information
** At least once a week, frequently, very frequently
Differential characteristics

In Table 1 it can be seen that infertile and fertile women were younger than the rest. Primary infertile women started their sexual life at an average age older than the rest. Both the percentage of women with abortion backgrounds and the abortions’ average turned out to be higher in the secondary infertile than in the sub-fecund and the fertile ones. Women with primary infertility reported a higher average of sexual intercourses during the 30 days previous to the interview than the rest of the women.

The percentages of women who declared to have certain pathologic antecedents that could contribute to the presence of sub-fecundity or infertility are shown in Table 2, but only the more frequent are detailed. In all of the cases it was mentioned the menstrual irregularities as the most frequent problem, although it is much more among the infertile ones, compared to the sub-fecund, and among the primary infertile compared to the secondary ones. The other reported antecedents were always more frequent in the infertile women.

The reports related to the attention and treatment of sub-fecund and infertile women appear in Table 3. There it can be seen that less than a half of the sub-fecund women consulted a doctor, whereas almost two third parts of the infertile women did it and that the primary infertile did it more frequently than the secondary ones. Around half of the women who saw a doctor used private medical services, around a third part public services of external consultation and only a low percentage used public hospitals.

Primary infertile women reported, proportionally more than the secondary infertile women, having received information on the cause of their problem, being the most frequent the absence of ovulation, followed by attributable to the husband and of fallopian tube obstruction. For women with secondary infertility, the main referred problem was that of uterine myomas, followed by absence of ovulation and uterine problems not sufficiently specified. Finally, sub-fecund women reported the uterine problems not sufficiently specified, the absence of ovulation and the use of injectable contraceptives as the most frequent. In all of the cases the percentage of women informed of the problem’s cause was very low, only the women with primary infertility exceeded 50 percent.
TABLE I
COMPARISON OF CERTAIN GENERAL CHARACTERISTICS OF THE FERTILE, SUB-FECUND AND INFERTILE WOMEN

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Fertile</th>
<th>Sub-fecund</th>
<th>Total</th>
<th>Infertile Primary</th>
<th>Infertile Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>8 792</td>
<td>1 632</td>
<td>516</td>
<td>196</td>
<td>320</td>
</tr>
<tr>
<td>Average age (AA)</td>
<td>32.9* (0.09)</td>
<td>35.2</td>
<td>34.8 (0.36)</td>
<td>32.1** (0.62)</td>
<td>36.5</td>
</tr>
<tr>
<td>Average age at first sexual intercourse (AA)</td>
<td>18.8 (0.04)</td>
<td>18.7</td>
<td>20.2 (0.25)</td>
<td>21.9** (0.50)</td>
<td>19.2</td>
</tr>
<tr>
<td>Number of sexual relations 30 days before the survey, mean (AA)</td>
<td>6.7</td>
<td>6.4</td>
<td>7.5*</td>
<td>8.1</td>
<td>7.2</td>
</tr>
<tr>
<td>Abortion record (%)</td>
<td>16.9</td>
<td>21.8</td>
<td>1.3</td>
<td>35.9*</td>
<td>1.5</td>
</tr>
<tr>
<td>Number of abortions, mean (AA)</td>
<td>1.3 (0.02)</td>
<td>0.03</td>
<td>0.08</td>
<td>0.08*</td>
<td>1.5</td>
</tr>
<tr>
<td>Wants one (another) child (%)</td>
<td>30.1</td>
<td>27.7</td>
<td>67.1*</td>
<td>83.0**</td>
<td>57.2</td>
</tr>
</tbody>
</table>

*: p < 0.05 between the total of infertile, sub-fecund and fertile women.
**: p < 0.05 between the primary and secondary fertile women.

For the comparisons of proportions the square Ji (with absolute) was used, for the comparison of two means the Student t test was used, and for the comparison of three means, it was used the variance analysis.
Table 2 shows that a little more than a third part of the sub-fecund women and of the infertile ones were treated; only the women with primary infertility surpassed 40 percent. Three quarters or more of the women who were treated reported this was based on "medications", a few of the women underwent surgical interventions and the percentage of those who used in vitro fertilization was almost zero.

The importance of having followed a treatment

From all of the women who received some kind of treatment having consulted a doctor (782), 75 percent became pregnant, at the time that among those who did not received any kind of treatment (505), 70 percent also became pregnant (p = 0.04). Separately, the ones who received treatment and became pregnant (589) as well as those who did not received treatment and became pregnant (352) had an alive-born child in the same proportions (90 percent). Besides, the fraction of sub-fecund women who received treatment was minor than that corresponding to infertile women (32 and 38 percent, respectively, p = 0.005).
### TABLE 3
PERCENTAGE OF SUB-FECUND AND INFERTILE WOMEN WHO ATTENDED MEDICAL CONSULT AND CAUSES OF INFERTILITY

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Sub-fecund</th>
<th>Total</th>
<th>Infertile</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended to consult (%)</td>
<td>1,632</td>
<td>516</td>
<td>196</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>Consulted a doctor (% of those who attended)</td>
<td>44.5*</td>
<td>61.8</td>
<td>72.4**</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td>Kind of service (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>51.8</td>
<td>49.2</td>
<td>46.5</td>
<td>51.4</td>
<td></td>
</tr>
<tr>
<td>Public hospital</td>
<td>10.6</td>
<td>13.7</td>
<td>18.3</td>
<td>10.3</td>
<td></td>
</tr>
<tr>
<td>External consult at public service</td>
<td>28.6</td>
<td>33.0</td>
<td>32.4</td>
<td>32.4</td>
<td></td>
</tr>
<tr>
<td>External consult others</td>
<td>9.0</td>
<td>4.1</td>
<td>2.8</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Know what was the problem (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No ovulation</td>
<td>13.4</td>
<td>16.5</td>
<td>20.0</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>Not specified of the uterus</td>
<td>14.1</td>
<td>9.5</td>
<td>5.7</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>Injectable contraceptives</td>
<td>7.4</td>
<td>1.7</td>
<td>1.9</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Tube obstruction</td>
<td>6.9</td>
<td>9.5</td>
<td>11.3</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>Uterine miomas</td>
<td>6.3</td>
<td>13.9</td>
<td>10.4</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>Ovary others</td>
<td>5.4</td>
<td>2.2</td>
<td>0.9</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Husband</td>
<td>3.8</td>
<td>12.1</td>
<td>18.9</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Cause (%) of those who know what the problem was</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal infections and uterine neck</td>
<td>3.8</td>
<td>2.6</td>
<td>0.9</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Ovary cysts</td>
<td>3.1</td>
<td>6.9</td>
<td>7.5</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Endometriosis</td>
<td>0.5</td>
<td>2.6</td>
<td>0.9</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Not specified</td>
<td>6.7</td>
<td>5.6</td>
<td>4.7</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>28.6</td>
<td>16.9</td>
<td>16.9</td>
<td>16.6</td>
<td></td>
</tr>
</tbody>
</table>

*: p < 0.05 between the total of infertile and sub-fecund women.
**: p < 0.05 between the primary and secondary infertile women

The significance tests were not done for the type of service and reported problems.

For the comparisons of proportions the square Ji test was used (with the absolute frequencies)

**Wanting to have children**

Finally, 83 percent of the primary infertile women declared their desire to have a child, differently from the 57 percent of the secondary infertile women (who, by definition, had already had a child). The average age of the primary infertile women who wanted to have a child was 30 years, whereas for the ones who did not want to have a child any longer it was 40 years (p < 0.0005). 28 percent of the sub-fecund and 30 percent of the fertile expressed their desire to have another child.
Discussion

The questions in the instrument do not allow locating in time the infertile periods (12 months or longer) reported by the women, for they were referring to any moment in their fertile life. It is possible that for this reason most of those who at first could have been identified as infertile, at the moment of the survey had already become pregnant and they would be sub-fecund instead. This means that, among Mexican population, slightly more than a tenth part of all of the women who have had sexual intercourses or three fourths of those who could have ever been classified as infertile, actually have been sub-fecund.

<table>
<thead>
<tr>
<th></th>
<th>Sub-fecund (1 632)</th>
<th>Total (516)</th>
<th>Infertile Primary (196)</th>
<th>Infertile Secundary (320)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did receive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td>31.6* (n = 509)</td>
<td>38.2</td>
<td>47.4** (n = 198)</td>
<td>32.5</td>
</tr>
<tr>
<td>Surgery</td>
<td>72.9</td>
<td>78.8</td>
<td>82.8</td>
<td>75.2</td>
</tr>
<tr>
<td></td>
<td>4.7</td>
<td>7.6</td>
<td>6.5</td>
<td>8.6</td>
</tr>
<tr>
<td>In Vitro fertilization</td>
<td>0.2</td>
<td>1.0</td>
<td>1.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Others</td>
<td>22.2</td>
<td>12.6</td>
<td>9.6</td>
<td>15.2</td>
</tr>
</tbody>
</table>

*: p < 0.05 between the total of infertile women and sub-fecund women.
**: p < 0.05 between the primary and secondary infertile women.
The significance tests were not done for the received treatment.
For the comparisons of proportions the square Ji test was used (with the absolute frequencies).

Apart from that, the infertility prevalence at the moment of the survey would be close to 4 percent of the total of the women who had already had sexual intercourses. This percentage corresponds to women who declared to have experienced an infertile period at any time in their fertile life and that, up to the survey’s date, had not been able to become pregnant or, in any case, a complete pregnancy. This means that, in that moment, around 750 thousand women in Mexico would have been suffering from infertility without being able to find a solution to their problem.
This prevalence level is considerably below of what is reported for other populations, always above 10 percent (Geelhoed et al., 2002; Wishak, 2001), even if it is considered a reference period of 24 months or longer (WHO, 2001b; Russian Academy of Medical Sciences, 2000; Templeton et al., 1990). The lowest prevalence found in the bibliographical revision was of 8 percent in Canada (Case, 2003).

Only in a survey performed in Australia the frequency of infertility in women at any time in their life is informed (19.1 percent, Webb and Holman, 1992); certainly, this figure is larger than the one reported here for the total of sub-fecund and infertile women, that would be close to 15 percent of the women who had already had sexual intercourses. As in other studies (Wishak, 2001; Schrijvers et al., 1991), here we communicate a lower primary infertility compared to the secondary, in a one-to-two relation, approximately.

Similarly to other cases (Lorimer, 1954; Webb and Holman, 1992; Dunson et al., 2004), here it is observed that sub-fecund and infertile women were of an older average age than the fertile ones, even though the primary infertile were younger than the secondary and the sub-fecund ones.

Different studies (Webb and Holman, 1992; Templeton et al., 1990) mention that the humble achievements of the treatments, given that a large part of the women some time infertile are able eventually to give birth, either by having followed or not a treatment, as it is appreciated in the present work.

Only in a low percentage of the sub-fecund women (a third part) and of the infertile ones (the half) looked for help, however, almost all of the women who did it consulted a doctor. Approximately, a half of them used private services, some of which could have the training to treat this problem, but no more details can be obtained from the database. Approximately a third part used public medical services of external consultation, where the treatment would be mainly in charge of GPs. And it was only a minority the ones who had access to public hospitals where specialized attention could be found.

The sort of treatment largely followed refers to "medications", surely ovulation inductors. These treatments have been pointed as "poor level technology", still common in some industrialized countries (Stephen and Chandra, 2000). Only a reduced proportion of women received treatment of the highest technology kind, as surgery, and almost none used or had access to in vitro fertilization. It is possible that this sort of treatments of poor level influences the fact that, finally, having used them or not has the same result as for the final result.
of a complete pregnancy. The aforementioned does not necessarily mean that the treatments had been inappropriate, particularly to the causes of infertility.

Although in this survey the infertility’s psychological or emotional effects were not explored, some data can suggest something on what happens in this respect. For instance, the fact that infertile women declared their desire to have a (or another) child in a higher proportion than the sub-fertile women and, obviously, the fertile ones, and that, what is more, the primary infertile women did this in yet even higher proportions, suggest us that among them there should be a discomfort or an affliction due to the lack of something they surely consider delightful and which they insistently keep looking for. This assumption is supported, besides, by the results which show infertile women, and particularly the primary infertile ones, had a larger average number of sexual intercourses during the 30 days previous to the interview. The same is suggested by the fact that these women in a higher percentage consulted a doctor, they acknowledge the nature of their problem and received some treatment, compared to their counterparts.

Similarly to the finding in other studies, it is possible that as time passes by the state of anxiety that is suggested above, even if it can increase with the years, eventually tends to fade in the long run (Guz et al., 2003; Matsubayashi et al., 2004), for it was notorious that women with primary infertility, the ones who did not want to have a child any more were noticeably older (the average age was 40) than the ones who still desired it (the average age was 30).

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