

## ORIGINAL RESEARCH

## Prevalence and characterization of pelvic organ prolapse in women from Quindío, Colombia. 2016-2019

Prevalencia y caracterización del prolapso de órganos pélvicos en mujeres del Quindío, Colombia. 2016-2019

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### Abstract

**Introduction:** Pelvic organ prolapse (POP) is a frequent condition that affects both the quality of life and sexual function of women.

**Objective:** To determine the prevalence of POP in women from Quindío, Colombia, and to characterize this population.

**Materials and methods:** Cross-sectional study conducted in 1185 women who underwent genital assessment using the pelvic organ prolapse quantification system (POPQ) in a tertiary care university hospital in Armenia (Colombia) between 2016 and 2019. Data were analyzed using descriptive statistics.

**Results:** The median age of the participants was 49 years (range: 27-87). The prevalence of POP was 29.95% (95%CI: 19.23-31.71). Anterior compartment prolapse was the most frequent type of POP (38.87%), followed by posterior compartment prolapse (23.94%). Grade 2 prolapse was the most common POP grade (33.52%), while grade 4 was the least common (6.19%). Regarding age, the highest frequency of POP was found in women >50 years (38.94%; 95%CI: 31.19-42.88), while in grand multiparas (>5 births) the frequency of POP was 77.86% (95% CI: 72.11-85.51). Fecal incontinence, urinary incontinence, and occult incontinence were reported in 2.81%, 31.83%, and 54.36% of patients with POP, respectively.

**Conclusions:** POP is highly prevalent in Quindío women, with the majority of cases being multicompartiment POP. This is a common condition in women over 50 years of age, and grand multiparas had a greater risk of POP. These data confirm that POP is a common health problem in this region of the country.

### Resumen

**Introducción.** El prolapso de órganos pélvicos (POP) es una condición frecuente que afecta tanto la calidad de vida, como la función sexual de las mujeres.

**Objetivos.** Determinar la prevalencia del POP en mujeres de Quindío, Colombia, y realizar una caracterización de esta población.

**Materiales y métodos.** Estudio transversal realizado en 1185 mujeres a quienes se les realizó evaluación genital mediante el sistema de cuantificación del prolapso de órganos pélvicos (en inglés POPQ) en un hospital universitario de tercer nivel en Armenia, Colombia, entre 2016 y 2019. Los datos se analizaron a través de estadística descriptiva.

**Resultados.** La mediana de edad de las participantes fue de 49 años (rango: 27-87). La prevalencia del POP fue de 29.95% (IC95%: 19.23-31.71). El tipo de prolapso más frecuente fue el del compartimento anterior (38.87%), seguido por el del compartimento posterior (23.94%). El grado de prolapso más frecuente fue el grado 2 (33.52%), y el menos frecuente el grado 4 (6.19%). En cuanto a la edad, la frecuencia más alta de POP se observó en mujeres >50 años (38.94%; IC95%: 31.19-42.88), mientras que en grandes multíparas (>5 partos) la frecuencia de POP fue de 77.86% (IC95%:72.11-85.51). Se reportó incontinencia fecal, incontinencia urinaria e incontinencia urinaria oculta en 2.81%, 31.83% y 54.36%, respectivamente, de las pacientes con POP.

**Conclusiones.** La prevalencia de POP es alta en las mujeres del Quindío, la mayoría multicompartimental. El POP es una condición frecuente entre las mayores de 50 años; las grandes multíparas tienen mayor riesgo de presentarlo. Estos datos confirman que el POP es un problema de salud común en esta región del país.

## Introduction

Pelvic organ prolapse (POP) is a condition in which one or more pelvic organs, including bladder (anterior wall), uterus (apex), vaginal vault, and rectum (posterior wall) bulge into the vagina and towards the perineum or anal canal.<sup>1</sup> This is a common condition with an increasing prevalence due to the aging population, affecting approximately 30% of women aged 20 to 59 and more than half of women over 50.<sup>1-4</sup>

Approximately 45-75% of women may develop some degree of POP in their lifetime, but only 5% are symptomatic; in fact, the risk of requiring surgery to treat this condition (up to the age of 80) is only 12.6%, but if combined with stress urinary incontinence, the risk rises to 20%.<sup>5</sup>

In developing countries, pelvic floor dysfunctions are a major cause of distress among adult women; however, in most cases, such dysfunctions remain concealed or unacknowledged because women often bear the pain and discomfort caused by conditions associated with their reproductive organs in secret due to social stigma. The economic and social implications of such a situation are often severe.<sup>1,4,6,7</sup>

The reported prevalence of POP varies greatly, and several studies indicate a range of 3% to 50%.<sup>8-12</sup> In a literature review, Davis & Kumar,<sup>8</sup> reported that nearly 50% of parous women lose pelvic floor support, resulting in some degree of POP. Hendrix *et al.*,<sup>9</sup> in a study conducted in 27 342 women enrolled in the Women's Health Initiative Hormone Replacement Therapy Clinical Trial, established that 38% and 41% of women with and without hysterectomy, respectively, had some type of prolapse. Finally, Espitia-De la Hoz,<sup>4</sup> in an observational study conducted in 13 824 women treated at the gynecology outpatient service of the Clínica La Sagrada Familia in Armenia (Colombia), found that 68.38% and 31.62% of the participants with and without hysterectomy, respectively, were diagnosed with genital prolapse.

POP is associated with various signs and symptoms of urinary or fecal incontinence, voiding dysfunction, dyschezia, heavy pelvic pressure, a bulging sensation, and vaginal and lumbar pain.<sup>13,14</sup> Since its diagnosis is mainly clinical, establishing it usually requires minimal additional investigation.<sup>1,4,6</sup>

Some of the most common risk factors related to POP include advanced age, early age at first birth, vaginal or assisted delivery, multiparity, obesity, prolonged second stage of labor, lifting heavy objects, and performing high-impact activities or heavy duties,<sup>4,15-17</sup> all of which involve aging, hormonal imbalance, trauma, denervation, alterations in biomechanics, genetic factors, and mechanical and oxidative stress.<sup>6</sup>

In order to classify POP, the International Continence Society, the American Urogynecological Society, and the Society of Gynecologic Surgeons approved the use of the Pelvic Organ Prolapse Quantifications System (POP-Q), which measures 9 reference points in the vagina and perineum that are grouped in a 3x3 grid. Once measurements are taken, it is possible to identify the stage of the prolapse (1 to 4), which takes into consideration total vaginal length and the distance of the reference point in relation to the hymen (expressed in centimeters) (Table 1).<sup>18</sup>

**Table 1.** Pelvic Organ Prolapse Quantification System (POP-Q).

<b>Anterior wall</b> Aa	Anterior wall Ba	Cervix or vaginal cuff C
<b>Genital hiatus</b> gh	Perineal body pb	Total vaginal length tvL
<b>Posterior wall</b> Ap	Posterior wall Bp	Posterior fornix D

Source: Own elaboration.

There are currently many options for the treatment of POP, including surgical and non-surgical strategies.<sup>1,6</sup> Mild or asymptomatic POP, for example, requires conservative treatment for which reassurance or a simple explanation of the condition is usually all that is needed.<sup>1,19</sup> Furthermore, the risk of a woman being operated on for POP during her lifetime is low, ranging from 12% to 20%.<sup>5,6,19</sup>

It is clear that POP is a health problem that has a negative impact on the quality of life and sexual function of women,<sup>2,5,10,20</sup> as those suffering from it have discomfort due to the bulge that protrudes through the vagina. This discomfort include difficulty sitting, walking, and lifting objects.<sup>2,20</sup> Consequently, the objectives of the present study were to determine the prevalence of pelvic organ prolapse in a population of women from Quindío, Colombia, and to characterize it.

## Materials and methods

### Study type and population

Cross-sectional study. The study population consisted of women of legal age who, between February 1, 2016, and February 28, 2019, visited a gynecology outpatient clinic and underwent speculoscopy and genital examination using the POP-Q system at a tertiary care university hospital in Armenia (Quindío, Colombia), which serves a population enrolled in both the subsidized and contributory health insurance schemes of the Colombian General Social Security Health System.

Sample size was calculated using the Epi Info software based on the population of women registered in Quindío. Initially, 1 063 participants were estimated, with a confidence level of 95% and a margin of error of 3%, but taking into account an adjusted loss rate of 10%, 1 169 participants were finally included. The expected POP prevalence was 30%. Participants were recruited by simple random sampling.

During the study period, 9 753 women were treated for non-obstetric conditions at the institution where the research was conducted, of whom 2 693 (27.61%) met the eligibility criteria described above. Of these 2 693, 1 473 were selected by simple random sampling, but 13 were excluded because they had received radiotherapy or chemotherapy treatment, 217 due to a history of hysterectomy and/or pelvic floor reconstructive surgery (since these are factors already associated with the appearance of prolapse), 41 because the data for all the variables considered in the study were not included in the medical records (10% or more of incomplete data), and 17 because of difficulties in communication. Therefore, the final sample of the study was 1 185 women.

### Procedures

Data for the 1 185 participants were obtained from a review of their medical records by three general physicians, who identified patients with a POP diagnosis (ICD-10: N81 or N81.9) and confirmed that prolapse findings had been reported according to the POP-Q system. As stated above, all participants were assessed by specialists from the gynecology department of the institution in which the study was conducted, where the usage of the POP-Q system for the evaluation and classification of POP has been standardized since 2009.

Each woman's information was collected on a form designed by the principal investigator and previously evaluated in a pilot study, and then entered into a Microsoft Excel database that was sent to the epidemiological team that supported the study.

## Variables

Information was obtained on sociodemographic variables such as age, race, educational attainment, socioeconomic status level, marital status, occupation, type of health insurance scheme, religion, and origin; morphometric variables such as height, weight, and body mass index (BMI); sexual and reproductive health history such as age at first gestation, number of pregnancies, parity, age at menopause, use of contraception, and use of hormonal therapy for menopause; sexual behavior variables such as sexual orientation, age at first sexual intercourse, average monthly frequency of sexual intercourse, and length of cohabitation; history of episiotomy, perineum tears during childbirth, assisted delivery, sexual abuse, sexual violence in marriage, and chronic diseases; habits such as smoking, and coffee and alcohol intake; POP-Q (1-4) prolapse classification; frequency of urinary and fecal incontinence episodes; and presence of occult urinary incontinence (stress urinary incontinence at physical examination or urodynamics).<sup>6</sup>

## Statistical analysis

The overall prevalence of POP in the sample was obtained using the following formula: number of women with POP/number of women examined. Data for continuous variables were expressed using median and ranges or means and standard deviations depending on their distribution, while absolute frequencies, percentages, and 95% confidence intervals (95%CI) were used for categorical variables. The distribution of quantitative variables was evaluated with the Kolmogorov-Smirnov normality test. Data were analyzed using SPSS 23 statistical software.

## Ethical considerations

The study protocol was approved by the Research Ethics Committee of the Clínica la Sagrada Familia of Armenia according to Minutes No. 126 of November 12, 2015. The study also took into account the ethical principles for medical research involving human subjects established by the Declaration of Helsinki<sup>21</sup> and the provisions on health research of Resolution 8430 of 1993 of the Colombian Ministry of Health.<sup>22</sup>

Informed consent was not required for this study because it was based on the clinical records of the participants, whose confidentiality was guaranteed.

## Results

The median age of participants was 49 years, ranging from 27 to 87 years, with the majority (62.61%) being over 40 years; 83.96% lived in urban areas, 68.94% were white, 41.94% were married or living in cohabitation, 87.34% were Catholic, 89.95% belonged to the contributory health insurance regime, and 33.16% had a BMI >30 (Table 2).

Regarding obstetric characteristics, it was found that 44.97% of the participants were grand multiparas (parity >5), 31.13% had three children or less, 15.78% were nulliparous, 59.15% had episiotomy, 25.23% had tears during childbirth, and 3.96% had an assisted delivery. In addition, the median number of deliveries was 5 (range: 0-18), and of cesarean section was 2 (range: 0-7).

The median age at first delivery was 17 years (range: 12-21), and in most cases it occurred in a hospital (80.42%) by vaginal route (92.57%). 14.59% of women were in labor for more than 48 hours the first time they gave birth.

**Table 2.** Sociodemographic characteristics of the 1 185 women included in the study.

Variables		Result
Age (x±SD years)		52.74±5.64
Couple's age (x±SD years)		59.98±7.35
Height (x±SD cm)		159.38±6.38
Weight (x±SD kg)		62.74±7.19
Body mass index (x±SD)		24.91±4.37
Race (n (%))	White	817 (68.94)
	Indigenous	35 (2.95)
	Afro-Colombians	333 (28.1)
Socioeconomic status (n (%))	High	140 (11.81)
	Middle	675 (56.96)
	Low	370 (31.22)
Educational attainment (n (%))	Illiterate	36 (3.03)
	Primary	75 (6.32)
	Secondary	426 (35.94)
	Technical	330 (27.84)
Marital status (n (%))	Professional	318 (26.83)
	Married	497 (41.94)
	Domestic partnership	453 (38.22)
	Single	93 (7.84)
Occupation (n (%))	Divorced	142 (11.98)
	Housewife	746 (62.95)
	Employee	319 (26.91)
	Unemployed	47 (3.96)
	Retired	73 (6.16)

X: mean; SD: standard deviation.

Source: Own elaboration.

In terms of comorbidities, 69.11% were obese, 35.94% had dyslipidemia, 34.43% had cardiovascular diseases, 23.85% had hypertension, 12.99% had osteoporosis, 9.11% had diabetes, 6.91% had asthma, 6.32% had chronic obstructive pulmonary disease, and 3.54% had depression. Table 3 presents the POP-Q classification results for the sample.

**Table 3.** Pelvic organ prolapse quantification in the 1 185 women included in the study using the POP-Q system.

POP-Q	X ± SD
Aa	- 2.94±1.09cm
Ba	- 2.61±1.48cm
C	- 7.38±2.96cm
Gh	3.71±1.35cm
Pb	2.62±1.14cm
TVL	9.71±3.07cm
Ap	- 2.47±1.61cm
Bp	- 2.58±1.12cm
D	- 8.29±1.93cm

X: mean; SD: standard deviation.

Source: Own elaboration.

77.97% of patients reported having experienced prolapse for more than three years, but only 23.96% (n=284) had sought medical treatment for that reason.

Of the 1 185 participants, the POP diagnosis was confirmed in 355, i.e., there was a prevalence of 29.95% (95%CI: 19.23-31.71). Of these, 38.87% (95%CI: 31.02-42.08) had anterior prolapse; 23.94% (95%CI: 15.59-33.58) had posterior prolapse; 12.11% (95%CI: 9.14-13.27) had apical prolapse; and 6.19% (95%CI: 4.72-8.41) had severe prolapse (genital procidentia); the remaining 18.87% (95%CI: 16.39-19.47) had a combination of prolapses (anterior and posterior).

The most common symptoms were vaginal bulging, pelvic heaviness, and/or lower abdominal pressure (86.19%, 85.35%, and 82.81%, respectively), followed by difficulties emptying the bladder or defecating (71.83% and 68.45%, respectively). Similarly, 54.92% of women with POP presented with 3 or more symptoms simultaneously, and 26.76%, 23.94%, and 20.84% classified them as mild, moderate, and severe, respectively. Of the 238 women with stage 2-4 POP, 12.18% reported “something falling out of my vagina,” and 3.36% reported “feeling something coming out of my vagina.”

Concerning prolapse severity, according to the POP-Q system, grade 2 was the most frequent (33.52%; 95%CI: 31.68-35.86), and grade 4 was the least frequent (6.19%; 95%CI: 2.58-7.23) (Table 4).

**Table 4.** Degree of prolapse in women with pelvic organ prolapse in Quindío, Colombia. 2016-2019.

Degree of prolapse	n	%
1	117	32.95
2	119	33.52
3	97	27.32
4	22	6.19
Total	355	100

Source: Own elaboration.

The frequency of POP in the group of women older than 50 years was 38.94% (95%CI: 31.19-42.88), whereas it was 77.86% (95%CI: 72.11-85.51) in the grand multiparous group ( $\geq 5$  children). Fecal incontinence, urinary incontinence, and occult urinary incontinence were reported in 2.81% (95%CI: 1.31-3.04), 31.83% (95%CI: 26.12-34.09), and 54.36% (95%CI: 51.67-63.61) of patients with POP, respectively (Table 5). Sexual dysfunctions were reported in 35.77% of participants.

**Table 5.** Type of urinary incontinence in women with pelvic organ prolapse in Quindío, Colombia. 2016-2019.

Type of urinary incontinence	n	%
Stress	42	37.16
Urge	47	41.59
Mixed	24	21.23
Total	113	100

Source: Own elaboration.

## Discussion

The prevalence of POP in the present study was 29.95%. This figure is slightly higher than the one reported by Aytan *et al.*,<sup>23</sup> in a study conducted in 1 320 women treated between June and December 2008 at a university hospital in Mersin, Turkey, in which they found

that 27.1% had this condition. It also differs from the study by Espitia,<sup>6</sup> who evaluated and described the postoperative results of colposcleisis in a population of women from Quindío with POP and found that 27.18% of the patients who between February 1, 2009, and February 28, 2019, consulted the gynecology service had POP. However, this figure is significantly smaller than that reported by Masenga *et al.*,<sup>24</sup> who found that 64.6% of 1 047 women recruited between January and May 2015 in Tanzania's Kilimanjaro region had stage 2-4 POP and 6.7% had severe POP descending 1cm or more below the hymen. Differences in these results could be attributed to discrepancies in each study as well as geographic variations in the populations studied, in addition to the fact that some of these studies did not only include women with children.

With respect to prolapse characterization, the most common types were grade 1, 2, and 3 (32.95%, 33.52%, and 27.32, respectively). When compared to the findings of Nygaard *et al.*,<sup>25</sup> the above findings are striking because they are similar for grade 1 (33%), much lower for grade 2 (62.9%), and much higher for grade 3 (1.9%). Said study was performed in 270 older women (57 to 84 years), so the differences between results may be explained by the fact that the mean age of participants in the present study was lower:  $52.74 \pm 5.64$  years vs.  $68.3 \pm 5.6$  years.

Regarding the type of POP, the present study found that 38.87% and 23.94% of participants had anterior and posterior prolapse, respectively, which contrasts with what was reported by Seo *et al.*<sup>26</sup> who found a prevalence of 27.6% and 25.4%, respectively, for these types of POP in a study of 713 women aged 18 to 72 years who were followed up in Korea for annual Pap tests and pelvic exams. These differences can be explained because the study population of Seo *et al.*<sup>26</sup> had more deliveries, less access to medical care, and a greater physical workload.

Severe POP (genital procidentia) generates all kinds of discomfort (genital, urinary, and sexual),<sup>25,27</sup> so it requires treatment. In the present study, this type of prolapse was observed in 6.19% of the participants, a figure higher than the 3.37% reported by Espitia *et al.*<sup>4</sup> in their study in Armenia, Colombia. This percentage, however, is comparable to that found by Masenga *et al.*<sup>24</sup> in Tanzania and by Megabiaw *et al.*<sup>28</sup> in Ethiopia, who found that 6.7% and 7.2% of participants, respectively, had type 3-4 prolapse. Conversely, it is significantly lower than the figure reported by Scherf *et al.*<sup>29</sup> in a study of 1 067 women aimed at investigating the prevalence of POP in rural Gambia, where they found that 14% of participants had POP severe enough to necessitate surgical intervention.

Given the findings of this study and the fact that the population in Quindío and other regions of the country is aging, it is suggested that more focus be placed on addressing the consequences of POP, particularly among older and rural women. In this sense, measures should be taken to provide comprehensive health care services to women using gynecology services to lessen the impact of POP on their quality of life and sexual function.

Among the strengths of this study are the significant size of the sample, the fact that women were randomly selected, and that a globally accepted and validated instrument (POP-Q) was used. In terms of limitations, on the one hand, there is a possibility of misclassification bias and, on the other, the results were obtained in a single health care center, so they cannot be extended to all the women in the department.

## Conclusions

The prevalence of POP is high among Quindío women, with the majority of cases being multicompartmental. POP is a common condition in women over the age of 50, and grand multiparous women are at increased risk of developing it. These data confirm that POP is a frequent health problem in the region.

## Conflicts of interest

None stated by the authors.

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