Questionnaires to evaluate pelvic floor dysfunction in the postpartum period: a systematic review

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Background: Pelvic floor dysfunctions (PFDs) affect the female population, and the postpartum period can be related to the onset or aggravation of the disease. Early identification of the symptoms and the impact on quality of life can be achieved through assessment instruments.

Objective: The purpose of this systematic review is to evaluate questionnaires used to assess PFD in the postpartum period.

Methods: A systematic review study was conducted, following Preferred Reporting Items for the Systematic Reviews and Meta-Analyses (PRISMA) criteria, using the databases: PubMed, Biblioteca Virtual de Saúde (BVS), Web of Science, and Scopus, and the keywords PFD or pelvic floor disorders, postpartum or puerperium, and questionnaire. Articles published up till May 2018 were included, searching for articles using validated questionnaires for the evaluation of PFDs in postpartum women. The articles included were evaluated according to a checklist, and the validation studies and translated versions of the questionnaires were identified.

Results: The search of the databases resulted in 359 papers, and 33 were selected to compose this systematic review, using nine validated questionnaires to assess PFDs in the postpartum period: International Consultation on Incontinence Questionnaire – Vaginal Symptoms (ICIQ-VS), Pelvic Floor Distress Inventory 20 (PFDI-20), Pelvic Floor Impact Questionnaire (PFIQ-7), PFDI-46, Pelvic Floor Impact Questionnaire (PFIQ-31), Pelvic Floor Bother Questionnaire (PFBO), Female Pelvic Floor Questionnaire, electronic Personal Assessment Questionnaire – Pelvic Floor, and PFD questionnaire specific for pregnancy and postpartum. The most frequently reported questionnaires included PFDI-20, PFIQ-7, and ICIQ-VS and are recommended by ICI. In addition, the review identified a specific questionnaire, recently developed, to access PFD during pregnancy and postpartum.

Conclusion: The questionnaires used to evaluate PFD during postpartum period are developed for general population or urology/gynecology patients with incontinence and reinforce the paucity of highly recommended questionnaires designed for postpartum, in order to improve early and specific approach for this period of life.

Keywords: pelvic floor disorders, puerperium, women’s health, primary health care, surveys and questionnaires, patient reported outcome measure

Background
Pelvic floor dysfunctions (PFDs) comprise a wide variety of interrelated clinical conditions, such as urinary incontinence (UI), fecal incontinence (FI), pelvic organ prolapse (POP), sexual dysfunction, and other urogenital symptoms. They affect 23%–49% of women in general,1,2 with an increasing incidence estimate to 43.8 million cases in 2050 in developed and developing countries,3,4 resulting in negative repercussions (emotional and physical) on women’s quality of life (QoL).

The development of PFDs is a complex process secondary to multifactorial etiology. The pregnancy–puerperal cycle is one of the periods correlated with...
the onset or aggravation of the disorders. The postpartum period provides a window of opportunity for early identification of symptoms to provide health promotion actions, thus reducing the development of PFDs and their consequences.

The precocious perception of these symptoms in puerperium depends on factors such as access and quality of care from the health team, as urogenital symptoms are accepted by women as a natural consequence of childbirth and/or aging, which may delay the diagnosis and treatment of PFDs.

The questionnaires are health instruments that aid in fleshing out the proper analysis of the patient. They are used to assess PFDs that identify urogenital symptoms, quantify the intensity and severity of symptoms, assess the impact on women’s QoL, and are used as a clinical parameter in the treatment and evolution of PFDs. Moreover, in medical research, they are not invasive features and are low in cost, facilitating the reproducibility of the method.

Thus, the objective of this systematic review is to evaluate questionnaires used to assess PFD in the postpartum period.

Methods
A systematic review of articles was conducted according to the Preferred Reporting Items for the Systematic Reviews and Meta-Analyses (PRISMA) Statement.

Search strategy
Articles published until May 2018 were included, and the search was limited to articles published in peer-reviewed journals, using questionnaires for the evaluation of PFDs in postpartum women.

A systematic literature search of studies without limits on the publication date was conducted in the PubMed databases (https://www.ncbi.nlm.nih.gov/pubmed), Virtual Health Library (http://bvsalud.org), Web of Science (https://isiknowledge.com), and Scopus (https://www.scopus.com). The terms used for the search were pelvic floor dysfunction OR pelvic floor disorders; AND postpartum OR puerperium; AND questionnaire. These keywords were selected according to the Medical Subject Headings (MeSH) in the National Library of Medicine and also by their synonyms.

Selection of the keywords for searching the databases followed the PICOS model. The Population (P) was defined as women in the postpartum period with no time limit; the Intervention (I) must be the use of questionnaire to evaluate PFD; the Outcome (O) was the results of PFD’s questionnaires; the Comparison group (C) was not applicable; the Study (S) design excluded were data-based articles (eg, review articles, guidelines, books).

Selection strategy
Initially, the duplicated articles were excluded, and then we undertook a screening of titles and abstracts according to the following exclusion criteria: 1) were not published in English, Portuguese, or Spanish languages; 2) were not related to the issue; 3) were not available for free access.

After this step, the remaining articles were read in full text and evaluated according to the following inclusion criteria: 1) in the method section the use of a validated questionnaire, in any female population, to evaluate the PFD must be described. 2) There was no restriction on sample size or study design (eg, cohort study, case–control, randomized clinical trial, cross-sectional studies), except to data-based articles (eg, reviews, guidelines, books).

The articles were excluded if they 1) used only specific questionnaires for urinary incontinence, FI, sexual dysfunctions, QoL in general or pain; 2) used adaptations or modifications of validated questionnaires (Figure 1).

To improve confidence in the selection of articles, the abstracts and full-text evaluation was conducted by two researchers in an independent and blinded way, strictly following the inclusion and exclusion criteria. In cases where there was disagreement over the selection of studies among the investigators, a third reviewer was consulted.

Strategy for analyzing selected articles
By the criteria described above, the articles were selected to compose this systematic review. The articles included in the review were evaluated according to a checklist to identify the following information: the PFD questionnaires used in each article, subjects, postpartum period of the assessment, other evaluation techniques used in data collection, article goal, and conclusion.

The validation studies of the questionnaires were found in the references, and the translated versions were searched in all databases of the research (PubMed databases, Virtual Health Library, Web of Science, and Scopus) without limitation of languages or date.

Results
The search of the databases resulted in 359 papers. Screening by title and abstract, 169 were excluded as duplicated titles and 19 as irrelevant to study purposes. The remaining articles
were read in their entirety, and 138 articles did not meet the inclusion criteria; thus, 33 articles were selected to compose this systematic review (Figure 1).

The 33 articles were published between 2007 and 2018, and the following information were included in Table 1: authors and year of publication, study design, population studied (n), questionnaires used, other techniques used in data collection, objective, and conclusion of the studies.

The instruments were applied in different periods of pregnancy and postpartum. One study initiated the follow-up before the pregnancy, and the postpartum period varied from 3 days up to 5 years.

The questionnaires were used in different types of studies, including cohort, cross-sectional, pilot study, case–control, and randomized clinical trials.

In total, we identified nine questionnaires used to assess PFDs in the postpartum period. The description of these questionnaires, frequency of use in the articles, and translated and validated versions for different languages are shown in Table 2.

The Pelvic Floor Distress Inventory-20 (PFDI-20) and the Pelvic Floor Impact Questionnaire-7 (PFIQ-7) are the two most frequent questionnaires in the articles included in this review, being used in 30.3% and 27.3% of studies, respectively. They assess urinary symptoms, POP, and colorectal symptoms and have versions translated into 17 and 16 different languages, respectively.

The International Consultation on Incontinence Questionnaire – Vaginal Symptoms (ICIQ-VS) is the third most frequent questionnaire in this review, being used in 24.2% of the studies. It assesses vaginal symptoms, including POPs and sexual matters, and has versions translated into seven different languages.

The Female Pelvic Floor Questionnaire (FPFQ) or Australian Questionnaire is the fourth most frequent in this review, being used in 12.1% of the studies. It assesses bladder, bowel, POP, and sexual domains, and has versions translated in three different languages.
<table>
<thead>
<tr>
<th>Author, year/study design</th>
<th>Population studied (n)</th>
<th>Questionnaire used</th>
<th>Other assessment methods</th>
<th>Article goal</th>
<th>Article conclusion</th>
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<tr>
<td>Araujo et al, 2018¹/¹⁴/cross-sectional study</td>
<td>Primiparous women 12 and 24 months postpartum</td>
<td>ICIQ-vS</td>
<td>ICIQ-SF PRMS POP-Q US transperineal tomographic US imaging</td>
<td>To evaluate PFM after different delivery modes</td>
<td>VD was associated with PFM avulsion. There was no difference among VD and nonelective or elective cesarean in symptomatology or other anatomic alterations evaluated through 3D/4D transperineal US</td>
</tr>
<tr>
<td>Lockhart et al, 2018¹/¹⁴/cohoot study</td>
<td>Nulligravida women before pregnancy and 6 months postpartum (n=10)</td>
<td>PFDI-20 PRQ-7</td>
<td>POP-Q dp3T MRI PRMS</td>
<td>To prospectively characterize dp3T MRI findings in nulligravida women and characterize changes 6 months after delivery in the same woman</td>
<td>Dynamic pelvic 3 T MRI detected levator tears and increased pelvic organ descent, which can be directly attributed to pregnancy and delivery</td>
</tr>
<tr>
<td>Keshwani et al, 2018¹/¹⁴/cross-sectional study</td>
<td>Primiparas with DrA (n=32)</td>
<td>PFDI-20, PRQ-7</td>
<td>Measure of IRD US transabdominal MBSR questionnaire – multidimensional body self-relations questionnaire VAS Oswestry Disability Index</td>
<td>To investigate the relationship between IRD and symptom severity in women with DrA in the early postpartum period</td>
<td>This preliminary work suggests that, in the early postpartum period, IRD as a measure of DrA severity is meaningful for body image</td>
</tr>
<tr>
<td>Halperin et al, 2017¹/¹⁴/cohoot study</td>
<td>Women sustained an OASIS 6 and 12 months postpartum (n=80)</td>
<td>PFBQ</td>
<td>Numerical scoring system to evaluate striae</td>
<td>To examine the association between the severities of SG and OASIS and to measure the symptoms regarding UI, fecal/flatus incontinence, and dyspareunia, at 6 and 12 months postpartum</td>
<td>The innovation of this research is the association between SG severity and OASIS severity (3A, 3B), added information regarding OASIS risk factors</td>
</tr>
<tr>
<td>Kruger et al, 2017¹/¹⁴/pilot study</td>
<td>Nulliparous women at third trimester of pregnancy and 5 months postpartum (n=167)</td>
<td>ICIQ-vS</td>
<td>ICIQ-SF ICIQ-BS Digital palpation by Dietz PRMS by Oxford US transperineal elastometry</td>
<td>To quantify levator ani muscle stiffness during the third trimester of pregnancy and postpartum in European and Polynesian women. Associations between stiffness, obstetric variables, and the risk of intrapartum levator ani injury (avulsion) were investigated</td>
<td>Quantification of levator ani muscle stiffness is feasible. Muscle stiffness is significantly different before and after birth</td>
</tr>
<tr>
<td>Metz et al., 2017¹/¹⁴/cross-sectional study</td>
<td>Nulliparous women at third trimester of pregnancy, 6 months, and 1 year postpartum (n=233)</td>
<td>PFD questionnaire specific for pregnancy and postpartum</td>
<td>None</td>
<td>The aim of this study was to develop and validate a questionnaire for the assessment of pelvic floor disorders, their symptoms, and risk factors in pregnancy and after birth including symptom course, severity, and impact on QoL</td>
<td>This pelvic floor questionnaire proved to be valid, reliable, and reactive for the assessment of pelvic floor disorders, their risk factors, incidence, and impact on QoL during pregnancy and postpartum. The questionnaire can be utilized to assess the course of symptoms and treatment effects using a scoring system</td>
</tr>
<tr>
<td>Study Authors, Year</td>
<td>Population Description</td>
<td>Questionnaire Details</td>
<td>Objectives</td>
<td>Relevant Findings</td>
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<tr>
<td>Abdool et al, 2017*</td>
<td>Black South African primiparae women at third trimester, 3, and 6 months postpartum (n=84)</td>
<td>ICIQ-VS, POP-Q</td>
<td>To study delivery-related changes in pelvic floor morphology in Black South African primiparae. We also intended to determine the impact of anatomical changes on symptoms in the postpartum period</td>
<td>There is significant alteration in pelvic organ support and levator hiatal distensibility postpartum, with more marked effects in women after VD of black primiparous women, 15% sustained levator trauma after their first VD.</td>
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<tr>
<td>Durnea et al, 2017*</td>
<td>Nulliparous at first trimester and 1 year postpartum (n=872)</td>
<td>FPFQ</td>
<td>To investigate the impact of the mode of delivery on postnatal PFD in primiparas, when PFD existing before the first pregnancy is taken into consideration</td>
<td>Prepregnancy PFD was common and was mainly associated with modifiable risk factors such as smoking and exercising. The main risk factor for postpartum PFD was the presence of similar symptoms prior to pregnancy, followed by anthropometric and intrapartum factors. Hip circumference seems to be a better predictor of PFD compared to BMI.</td>
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<tr>
<td>Ng et al, 2017*</td>
<td>Women 3–5 years after delivery (n=506)</td>
<td>PFDI-46, PRQ-31</td>
<td>To determine the prevalence of UI, FI, and POP 3–5 years after delivery</td>
<td>VD increases the risk for UI. Higher body weight and weight gain from first trimester are risk factors for SUI and UUI, respectively. More women reported symptoms of POP following an instrumental delivery than those who had a normal VD.</td>
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<tr>
<td>Desseauve et al, 2016*</td>
<td>Women sustained an OASIS (n=159)</td>
<td>PFBQ, EuroQoL, Pectatori grading system, VAS</td>
<td>To assess long-term pelvic floor symptoms after an OASI</td>
<td>Pelvic floor symptoms 4 years after OASI were highly prevalent.</td>
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<tr>
<td>Yohay et al, 2016*</td>
<td>Israeli women at third trimester and 3 months postpartum (n=117)</td>
<td>PFDI-20</td>
<td>To investigate the prevalence of PFD in women at late pregnancy and 3 months postpartum, to define changes in PFD rates, and to evaluate various obstetrical factors that may correlate with these changes</td>
<td>PFD is prevalent in both late pregnancy and the postpartum period. A significant association between perineal tears and SUI 3 months after delivery was noted.</td>
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</tr>
<tr>
<td>Kolberg Tennfjord et al, 2016*</td>
<td>Women 6 weeks after delivery (control) and 6 months after delivery (postintervention) (n=175)</td>
<td>ICIQ-VS</td>
<td>Evaluate effect of PFMT on vaginal symptoms and sexual matters, dyspareunia, and coital incontinence in primiparous women stratified by major or no defects of the LAM</td>
<td>Women with a major defect of the LAM had the symptom “vagina feels loose or lax” compared to the control group. No difference was found between groups for symptoms related to sexual dysfunction.</td>
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### Table 1 (Continued)

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<tr>
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<tbody>
<tr>
<td>Gagnon et al, 2016&lt;sup&gt;12&lt;/sup&gt;/cohort study</td>
<td>Women 3 and 6 months postpartum (n=54)</td>
<td>PFDI-20 PFIQ-7</td>
<td>PPMS PISQ-12</td>
<td>Evaluate and measure changes in pelvic floor function in women who self-selected to attend a standardized one-on-one PFMT program with a physiotherapist following a group workshop</td>
<td>Results suggest that a two-tiered, self-selection approach to administering PFMT in the postpartum period contributes to significant improvements in pelvic floor function, QoL, and PFMS, and to high satisfaction rates</td>
</tr>
<tr>
<td>Cyr et al, 2016&lt;sup&gt;15&lt;/sup&gt;/cross-sectional study</td>
<td>Women 3 months postpartum (n=58)</td>
<td>ICIQ-vS PFIQ-7</td>
<td>PF clinical examination US transperineal (PF morphometry) PRMS ICIQ-SF ICIQ-B</td>
<td>Compare PFM morphometry and function in primiparous women with and without puborectalis avulsion in the early postpartum period and then compare the two groups for pelvic floor disorders and impact on QoL</td>
<td>PFM morphometry and function are impaired in primiparous women with puborectalis avulsion in the early postpartum period. Moreover, it highlights specific muscle parameters that are altered, such as passive properties, strength, speed of contraction, and endurance</td>
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<tr>
<td>Leeman et al, 2016&lt;sup&gt;25&lt;/sup&gt;/cohort study</td>
<td>Nulliparous in the beginning of pregnancy and 6 months postpartum (n=448)</td>
<td>PRQ-7</td>
<td>POP-Q PRMS Paper towel test Visual inspection of the perineum Assessment of the rectal sphincter strength</td>
<td>To determine the effect of perineal laceration on pelvic floor outcomes, including UI, FI, perineal pain, and sexual function in a nulliparous cohort of women with a low incidence of episiotomy</td>
<td>Women having second-degree lacerations are not at increased risk for PFD other than increased pain, and slightly lower sexual function scores at 6 months postpartum</td>
</tr>
<tr>
<td>Tennfjord et al, 2015&lt;sup&gt;23&lt;/sup&gt;/cross-sectional study</td>
<td>Women 12 months after delivery (n=177)</td>
<td>ICIQ-vS</td>
<td>ICIQ FLUTSsex PPMS</td>
<td>Investigate primiparous women 12 months postpartum and study (i) prevalence and bother of coital incontinence, vaginal symptoms, and sexual matters and (ii) whether coital incontinence and vaginal symptoms were associated with VRP, PFM strength, and endurance</td>
<td>Twelve-month postpartum coital incontinence was rare, whereas the prevalence of vaginal symptoms interfering with sexual life was more common. The large majority of primiparous women in the study had sexual intercourse at 12 months postpartum, and the reported overall bother on sexual life was low. Women reporting &quot;vagina feels loose or lax&quot; had lower VRP, PFM strength, and endurance when compared to women without the symptom</td>
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<tr>
<td>van Delft et al, 2015&lt;sup&gt;27&lt;/sup&gt;/cohort study</td>
<td>Primiparae women at 36 weeks gestation, 3 months, and 1 year postpartum (n=269)</td>
<td>ICIQ-vS</td>
<td>PPMS assessed by Oxford modified scale POP-Q US (to evaluate LAM injury)</td>
<td>To explore the natural history of levator avulsion in primipara 1 year postpartum and correlate this to PFSD</td>
<td>Sixty-two percent of levator avulsions were no longer evident 1 year postpartum. Partial avulsion has a tendency to improve over time, which seems to be less common for complete</td>
</tr>
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<tr>
<th>Study &amp; Authors</th>
<th>Population</th>
<th>Questionnaires</th>
<th>Observations</th>
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<tr>
<td>Fritel et al, 2015</td>
<td>Nulliparous women at late pregnancy, 2 months, and 1 year postpartum (n=282)</td>
<td>POP-Q, PAD-test 24 hours PFMS assessed by Laycock scale, ICIQ-SF EuroQoL-SD</td>
<td>To compare, in an unselected population of nulliparous pregnant women, the postnatal effect of prenatal supervised PFM training with written instructions on postpartum UI. Prenatal supervised pelvic floor training was not superior to written instructions in reducing postnatal UI.</td>
</tr>
<tr>
<td>Lipschuetz et al, 2015</td>
<td>Women 12 months after delivery (n=198)</td>
<td>PFBQ</td>
<td>None</td>
</tr>
<tr>
<td>Laterza et al, 2015</td>
<td>Women immediately postpartum (up to 3 days) and 1 year after delivery (n=40)</td>
<td>FPFQ</td>
<td>US transperineal (to evaluate LAM injury), POP-Q</td>
</tr>
<tr>
<td>Rikard-Bell et al, 2014</td>
<td>Women immediately postpartum (n=766)</td>
<td>PFDI-20</td>
<td>None</td>
</tr>
<tr>
<td>van Delft et al, 2014</td>
<td>Women at 36 weeks gestation and 3 months postpartum (n=269)</td>
<td>ICIQ-vS, POP-Q, US (to evaluate LAM injury), ICIQ-SF St Mark’s Incontinence Score</td>
<td>To establish the relationship between postpartum LAM avulsion and signs and/or symptoms of PFD. Twenty-one percent of women sustain LAM avulsion during their first VD, with significant impact on signs and symptoms of PFD.</td>
</tr>
<tr>
<td>Rogers et al, 2014</td>
<td>Women before 37 weeks gestation, immediately, and 6 months postpartum (n=782)</td>
<td>PRQ-7, POP-Q, Paper towel test ISI, Wexner Fecal Incontinence Scale, Present Pain Intensity Scale, FSFI</td>
<td>To compare pelvic floor function and anatomy between women who delivered vaginally vs those with cesarean delivery prior to the second stage of labor. VD resulted in prolapse changes and objective UI but not in increased self-report PFD at 6 months postpartum compared to women who delivered by cesarean delivery prior to the second stage of labor. The second stage of labor had a modest effect on postpartum pelvic floor function.</td>
</tr>
<tr>
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<tr>
<td>Adaji et al, 2014&lt;sup&gt;41&lt;/sup&gt;/cross-sectional study</td>
<td>Women 9 weeks postpartum (n=90)</td>
<td>PFDI-20</td>
<td>None</td>
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<tr>
<td>Chan et al, 2014&lt;sup&gt;39&lt;/sup&gt;/cohort study</td>
<td>Primiparous women 8 weeks and 1 year postpartum (n=442)</td>
<td>PFDI-46 PRQ-31 POP-Q US transperineal (to evaluate LAM injury)</td>
<td>To evaluate the effect of LAM injury on pelvic floor disorders and health-related QoL in Chinese primiparous women during the first year after delivery</td>
</tr>
<tr>
<td>Geller et al, 2014&lt;sup&gt;42&lt;/sup&gt;/cohort study</td>
<td>Women at 35–37 weeks gestation and 6 weeks postpartum (n=73)</td>
<td>PFDI-20 PRQ-7 POP-Q US endoanal</td>
<td>To determine if shortened perineal body length (&lt;3 cm) is a risk factor for ultrasound-detected anal sphincter tear at first delivery</td>
</tr>
<tr>
<td>Durnea et al, 2014&lt;sup&gt;47&lt;/sup&gt;/cohort study</td>
<td>Women at 15 weeks gestation and 1 year postpartum (n=872)</td>
<td>FPFQ</td>
<td>None</td>
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<tr>
<td>Study</td>
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<td>Questionnaires</td>
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<tr>
<td>Elenskaia et al, 2013 cohort study</td>
<td>Women at second quarter pregnancy, 14 weeks, 1 year, and 5 years postpartum (n=182)</td>
<td>ePAQ PF, POP-Q</td>
<td>MRI, POP-Q</td>
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<tr>
<td>Crane et al, 2013 cohort study</td>
<td>Women 1 year after delivery (n=109)</td>
<td>PFDI-20, FSFI questionnaire</td>
<td>MRI, POP-Q</td>
</tr>
<tr>
<td>Chan et al, 2012 cohort study</td>
<td>Primiparous women from first to third trimester of pregnancy, 8 weeks, 6 months, and 1 year postpartum (n=328)</td>
<td>PFDI-46, None</td>
<td>MRI, POP-Q</td>
</tr>
<tr>
<td>Tin et al, 2010 cross-sectional study</td>
<td>It does not specify the postpartum period (n=325)</td>
<td>PFDI-20, MRI (to evaluate LAM injury)</td>
<td>MRI, POP-Q</td>
</tr>
<tr>
<td>Geller et al, 2007 cross-sectional study</td>
<td>Women 6 and 8 weeks postpartum (n=44)</td>
<td>PFDI-20, PFIQ-7</td>
<td>MRI, POP-Q</td>
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<tr>
<td>Brantham et al, 2007/78/cohort study</td>
<td>Women 6 weeks and 6 months postpartum (n=89)</td>
<td>PRQ-31</td>
<td>MRI (to evaluate LAM injury)</td>
<td>To assess postpartum changes in the LAM using MRI and relate these changes to obstetrical events and risk factors associated with PFD</td>
<td>Nulliparity did not guarantee a normal assessment of levator ani anatomy by our blinded reader, and frequency of injury in this series is somewhat greater than that previously reported for primiparas. Younger Caucasian primiparas had a better recovery at 6 months than older Caucasians. Subjects experiencing more global injury, in particular to the iliopectineous, tended not to recover muscle bulk</td>
</tr>
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</table>

Abbreviations: 3D, three-dimensional; dp3T MRI, dynamic pelvic 3 T magnetic resonance imaging; DrA, diastasis recti abdominis; ePAQ-PF, electronic Personal Assessment Questionnaire – Pelvic Floor; FSFI, Female Sexual Function Index; FI, fecal incontinence; FPFQ, Female Pelvic Floor Questionnaire; ICIQ-Bl, International Consultation on Incontinence Questionnaire – Bowel; ICIQ-LUTSsex, International Consultation on Incontinence Questionnaire – Female Sexual Matters Associated with Lower Urinary Tract Symptoms; ICIQ-QL, International Consultation on Incontinence Questionnaire – Quality of Life; ICIQ-VS, International Consultation on Incontinence Questionnaire – Vaginal Symptoms; IRD, interrectus distance; IS, Incontinence Symptom Index; LAM, levator ani muscle; OASIS, obstetric anal sphincter injuries; PBRQ, Pelvic Floor Bother Questionnaire; PFIQ-7, Pelvic Floor Impact Questionnaire; POP-Q, Pelvic Organ Prolapse – Quantification; QoL, quality of life; SUI, stress urinary incontinence; UI, urinary incontinence; US, ultrasound; UUI, urgency urinary incontinence; VRP, vaginal resting pressure; MRI, magnetic resonance imaging.

Discussion

Systematic review of the literature found 33 published articles using nine validated questionnaires for assessing PFD in pregnancy and postpartum period: PFDI-20, PFQ-7, PFIQ-7, PFIQ-31, and PRQ-31. The other questionnaires (PFDI-46, PFQ-31, ePAQ-PF, Pelvic Floor Bother Questionnaire PRQ, and 3D-12) were highly recommended for assessing PFD in the postpartum period. The questionnaires for assessment of PFD in pregnancy and postpartum period were also highly recommended for the evaluation of symptoms and health-related quality of life (QoL) of PFDI-20, PFQ-7, and ICIQ-QL. However, these questionnaires were not specified for pregnancy and postpartum period. The most frequent questionnaires used in our review were the pelvic floor dysfunction inventory (PFDI-20), Pelvic Floor Distress Inventory (PFDI-46), and Pelvic Floor Impact Questionnaire (PFIQ-7) due to the same instrument being part of modular questionnaires of the International Consultation on Incontinence (ICI), and the International Consultation on Obstetric Symptomatics (ICOS) being part of modular questionnaires of the International Consultation on Obstetrics (ICO). The use of the same instrument in different questionnaires allows meta-analysis of the published results.

The ICI is one of the consultations that are held under the auspices of the International Consultation on Urological Diseases and has a long-standing relationship with obstetrical events and high-quality instruments, standardizing the evaluation of PFD and the impact on QoL to guide professionals and researchers in the choice of questionnaires with universal application. The ICI aims to create an international consensus for evaluation of pelvic symptoms, recommending the ICIQ-VS for the evaluation of PFD and the impact on QoL in pregnant women. The ICIQ-VS and probably this is due to ICIQ-VS being part of the Modular questionnaires of the International Consultation on Obstetrics (ICO). The use of the same instrument in different questionnaires allows meta-analysis of the published results.

Regarding the PFDI and PFIQ questionnaires, they were first created in longer versions with 46 and 31 questions, respectively, but because they were too long they became burdensome and time consuming. The PDQ-46 and PFIQ-31 versions were highly recommended by several researchers favors comparison between data studies. The PDQ-46 and PFIQ-31 versions were highly recommended for the evaluation of symptoms and health-related QoL of PFDI-20, PFQ-7, and ICIQ-QL. The use of the same instrument in different questionnaires allows meta-analysis of the published results.

The use of the same instrument in different questionnaires allows meta-analysis of the published results.
### Table 2 Characterization, frequency, and translated and validated versions of questionnaires identified for evaluation of PFD in the postpartum period

<table>
<thead>
<tr>
<th>Questionnaire/validation article/country/year</th>
<th>Domains – questions</th>
<th>Identified categories</th>
<th>Translation</th>
<th>Freq (%)</th>
<th>Articles in which the questionnaire was used</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFQ-7/Barber et al, 2004 USA</td>
<td>Urinary – 7 POP – 7 Colorectal-anal – 7</td>
<td>QoL Boother</td>
<td>English, German, Portuguese, Greek, Turkish, Sinhala and Tamil (Sri Lanka)</td>
<td>9 (27.3%)</td>
<td>Gagnon et al, 2016&lt;sup&gt;23&lt;/sup&gt; Cyr et al, 2016&lt;sup&gt;4&lt;/sup&gt; Leeman et al, 2015&lt;sup&gt;13&lt;/sup&gt; Rogers et al, 2014&lt;sup&gt;23&lt;/sup&gt; Geller et al, 2014&lt;sup&gt;43&lt;/sup&gt; Tin et al, 2010&lt;sup&gt;11&lt;/sup&gt; Geller et al, 2007&lt;sup&gt;12&lt;/sup&gt; Lockhart et al, 2018&lt;sup&gt;11&lt;/sup&gt; Keshwani et al, 2018&lt;sup&gt;12&lt;/sup&gt;</td>
</tr>
<tr>
<td>ICIQ-VS/Price et al, 2006 UK</td>
<td>Vaginal – 9 Sexual – 5</td>
<td>Symptom QoL Boother</td>
<td>English, German, Portuguese, Greek, Turkish, Sinhala and Tamil (Sri Lanka)</td>
<td>8 (24.2%)</td>
<td>Araujo et al, 2018&lt;sup&gt;17&lt;/sup&gt; Kruger et al, 2017&lt;sup&gt;13&lt;/sup&gt; Abdool et al, 2017&lt;sup&gt;17&lt;/sup&gt; Kolberg Tennfjord et al, 2016&lt;sup&gt;2&lt;/sup&gt; Cyr et al, 2016&lt;sup&gt;24&lt;/sup&gt; Tennfjord et al, 2015&lt;sup&gt;14&lt;/sup&gt; van Delft et al, 2015&lt;sup&gt;11&lt;/sup&gt; van Delft et al, 2014&lt;sup&gt;12&lt;/sup&gt;</td>
</tr>
<tr>
<td>PFDI-46/Barber et al, 2001 USA</td>
<td>Urinary – 28 POP – 16 Colorectal-anal – 17&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Symptom Boother</td>
<td>English, Chinese, Spanish</td>
<td>3 (9.1%)</td>
<td>Ng et al, 2017&lt;sup&gt;11&lt;/sup&gt; Chan et al, 2014&lt;sup&gt;13&lt;/sup&gt; Chan et al, 2012&lt;sup&gt;10&lt;/sup&gt;</td>
</tr>
<tr>
<td>PFQ-31/Barber et al, 2001 USA</td>
<td>Urinary – 31 POP – 31 Colorectal-anal – 31</td>
<td>QoL Boother</td>
<td>English, Chinese, Spanish</td>
<td>3 (9.1%)</td>
<td>Ng et al, 2017&lt;sup&gt;11&lt;/sup&gt; Chan et al, 2014&lt;sup&gt;13&lt;/sup&gt; Chan et al, 2012&lt;sup&gt;10&lt;/sup&gt;</td>
</tr>
<tr>
<td>PFQ/Peterson et al, 2010&lt;sup&gt;17&lt;/sup&gt; USA</td>
<td>Urinary – 5 POP – 1 Bowel – 2 Sexual – 1</td>
<td>Boother</td>
<td>English, Turkish, Arabic, Portuguese</td>
<td>3 (9.1%)</td>
<td>Halperin et al, 2017&lt;sup&gt;14&lt;/sup&gt; Desseave et al, 2017&lt;sup&gt;20&lt;/sup&gt; Lipschuetz et al, 2015&lt;sup&gt;19&lt;/sup&gt;</td>
</tr>
<tr>
<td>ePAQ-PF/Radley et al, 2005&lt;sup&gt;79&lt;/sup&gt; UK</td>
<td>Urinary – 35 Bowel – 33 Vaginal – 22 Sexual – 28</td>
<td>Symptom QoL Boother</td>
<td>English&lt;sup&gt;18&lt;/sup&gt;</td>
<td>1 (3%)</td>
<td>Elenskaia et al, 2013&lt;sup&gt;24&lt;/sup&gt;</td>
</tr>
<tr>
<td>PFD in pregnancy and postpartum Metz et al, 2017&lt;sup&gt;16&lt;/sup&gt; Germany</td>
<td>Bladder – 16 Bowel – 11 POP – 5 Sexual – 9 Postpartum – 9</td>
<td>Symptom QoL Boother</td>
<td>German&lt;sup&gt;16&lt;/sup&gt;</td>
<td>1 (3%)</td>
<td>Metz et al, 2017&lt;sup&gt;16&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Notes:** <sup>1</sup>Original version of the questionnaire. <sup>2</sup>In the PFQ-46 questionnaire, some questions are used in more than one domain.

**Abbreviations:** ePAQ-PF, electronic Personal Assessment Questionnaire – Pelvic Floor; FPFQ, Female Pelvic Floor Questionnaire; ICIQ-VS, International Consultation on Incontinence Questionnaire – Vaginal Symptoms; PFQ, Pelvic Floor Bother Questionnaire; PFDI, Pelvic Floor Distress Inventory; PFIQ, Pelvic Floor Impact Questionnaire; POP, pelvic organ prolapse; QoL, quality of life.
provides several standardized questionnaires, but each one assesses certain domains of PFD, and they are specific to evaluate symptoms, QoL, and/or bothersome.80,82,83

Among the questionnaires included in this review, ePAQ-PF, FPFQ, and PFBQ can evaluate all these domains, but there are some limiting factors for wide use in literature.

The ePAQ-PF79 is an interactive, self-administered, computer-based questionnaire, developed for clinical practice and validated in primary and secondary care assessing four dimensions (urinary, intestinal, vaginal, and sexual) with symptoms identification, as well as quantifying degree of bother and impact on QoL. Indeed, the ePAQ-PF is not used extensively for reasons that include cost implications involved in purchasing an ePAQ license, and has no translated versions, limiting widespread use in researches.84

The PFBQ75 questionnaire was validated in 2010 with the proposal to create a concise questionnaire that could verify the presence and degree of discomfort of the PFD, allowing its use in both clinical practice and research. But the questions were not well distributed among the domains, because it contains only nine questions, with an emphasis on urinary symptoms (five questions) and only one question for POPs and one question for sexual functions. Another limiting factor is the existence of translated versions in only four languages (English, Turkish, Arabic, and Portuguese), with the Portuguese version just being published.

The FPFQ is a complete questionnaire that can assess all domains, besides addressing the perception of symptoms, the impact on QoL, and the degree of bother, validated in community-dwelling women for application by interview67 and for self-application.68 Both versions are composed of 42 questions distributed in four domains: bladder function (15 questions), bowel function (12 questions), POP symptoms (five questions), and sexual function (10 questions).

However, its use is still scarce, as it was introduced only recently in the scientific literature, originally developed and validated in the English language, with versions translated and adapted for application in German,69 French,70 and Serbian.71

The ICI recommendation also encourages researchers to the translation and validation of these instruments in different languages. The existence of translated and validated versions in several languages also corroborates the widespread use of these evaluation tools in research conducted around the world.80,83 This method makes it possible to compare results across studies, despite different languages and cultures because the data come from the same instrument. It also allows the study to be carried out on a larger scale with international participation.

None of these questionnaires described till now were developed to be specifically applied to postpartum women, and most questionnaires have been developed for use with general population or urology/gynecology patients with incontinence.

The PFD has been described during late reproductive period and the occurrence of worsening of symptoms among nonreproductive life. Risk factors such as overweight, obesity, life habits (smoking, sedentarism), age, parity, and mode of delivery have been shown as a health-related multifactorial risk that can be modified and interfered by the health care professionals.82,86 Indeed, the postpartum period is favorable and has been studied as an important period to early detection and early intervention.

Despite the generally high prevalence of postpartum PFD, the pelvic floor function is not routinely evaluated in health system.1,2,87 Therefore, the evaluation of an instrument capable of identifying the presence of these symptoms is useful for health promotion and prevention of comorbidities. Health instruments, such as PFD questionnaires, are developed to quantify the often-qualitative symptoms that are underreported and normally coexist and affect the QoL and productivity of many women.88 The questionnaires are used to identify and amplify early diagnosis and to assist the professionals in monitoring these symptoms, even when they are poorly perceived or not explained by the patients.89

Uniformity in obtaining symptoms and clinical complaints by professionals directs and enables evidence-based decision, allowing specialized societies to conduct behaviors and guide the management for PFD. It should be stressed that the health instruments established and recommended by societies, as well as the guidelines are fundamental in developing countries and in countries that adopt primary health care as the main access of patients.89

Furthermore, postpartum evaluation requires validated and preferred questionnaires that were designed for women during this period of life. Luthander et al90 believe that the greatest symptoms of PFD are related to the need of reviewing obstetric care. Thus, it serves as a tool for evaluating obstetric practices, allowing the identification of possible failures and the improvement in obstetric care.

Recently, Metz et al16 (2017) developed a questionnaire to assess PFDs in pregnancy and postpartum, and it is based on the German version of the FPFQ, with some modifications to access younger women. However, because this questionnaire is a recent addition to the field and only in German version,
its usefulness has not yet been thoroughly analyzed in clinical practice and further research is necessary to evaluate its feasibility and accessibility.

Still, the ICI advises that researchers should use existing highly recommended or recommended questionnaires if possible as this aids comparison, and to reduce the increasing proliferation of questionnaires.80,85

This review assists health care professionals and researchers in choosing an assessment tool for postpartum PFDs and proposes standardization in the method of research and scientific work. For the choice of questionnaire, it is suggested to use those validated and recommended by the academic society for population surveys and clinical practice of primary health care.80,85

The assessment of postpartum PDF is necessary to identify these symptoms, avoiding the evolution of these disorders. The international literature reveals that PFD tools developed specifically for women in postpartum period still need to be better explored and developed, allowing early treatment and comprehensive approach by the gynecologist and health care providers.16,90 There is still no questionnaire that is highly recommended for this purpose by ICI.80,85 They encourage researchers to raise the standard of outcome assessment and trial methodology in these fields in the forthcoming years.

Limitations

One of the limitations of this systematic review was the choice of appropriate keywords for the evaluation of PFDs. The term used in the literature is Pelvic Floor Dysfunction, but it is registered in the MeSH as Pelvic Floor Disorders. The two descriptors were used according to the citations in the literature. In addition, different types of reporting biases may hinder the interpretation of systematic reviews. Other limitation was the exclusion of articles published in journals with restricted access being 14 titles excluded. Besides that, the research was focused on articles published in peer-reviewed journals, excluding reports and books.

Conclusion

The most frequently reported questionnaires in this review included PFDI-20, PFIQ-7, and ICIQ-VS and are recommended by ICI. In addition, the review identified a specific questionnaire, recently developed, to access PFD during pregnancy and postpartum.16

This review reveals that the questionnaires used to evaluate PFD during postpartum period are developed for the general population or urology/gynecology patients with incontinence and reinforce the paucity of highly recommended questionnaires designed for postpartum, in order to improve early and specific approach for this period of life.

Disclosure

The authors report no conflicts of interest in this work.

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