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TREATMENT OUTCOMES OF PELVIC ORGAN PROLAPSE IN WOMEN WITH FRAILTY AND COGNITIVE IMPAIRMENT: A SYSTEMATIC REVIEW

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ABSTRAK

Pelvic organ prolapse (POP) is a condition that is often found in elderly women and may require conservative therapy or surgery. Frailty and cognitive impairment are important factors that can affect the outcome of therapy in the geriatric population. However, evidence on the effect of these two conditions on therapeutic outcomes in POP patients is limited. This systematic review aimed to evaluate the therapeutic outcomes of pelvic organ prolapse in women with cognitive impairment and/or frailty. Literature searches were conducted systematically on PubMed, OpenAlex, and ScienceDirect databases for articles published in the last 10 years. Studies that met the inclusion criteria were adult women with a diagnosis of POP who had cognitive impairment and/or frailty and underwent conservative and surgical therapy. Outcomes evaluated included therapy success or failure, POP recurrence, complications, reoperation, readmission, mortality, and quality of life. The selection of studies is carried out based on the inclusion and exclusion criteria that have been set. Of the 163 studies obtained, as many as two studies were found that met the research inclusion criteria. Frailty is consistently associated with poorer therapeutic outcomes. In prospective cohort studies, frail patients had twice the risk of therapy failure than non-frail patients (adjusted hazard ratio [aHR] 2.06), although all groups showed sustained improvement in quality of life during the follow-up period. In large-scale retrospective cohort studies, increased frailty rates were associated with increased postoperative complications, including urinary tract infections and cardiovascular complications, as well as longer length of hospitalization. Both studies show that frailty is a stronger predictor of output than chronological age. Evidence suggests that frailty is an important factor influencing the outcome of therapy in women with POP. The integration of frailty assessments in clinical evaluation can help with risk stratification and therapeutic decision-making. However, the amount of available research is still limited so further studies are needed to evaluate the role of frailty and cognitive impairment on therapeutic outcomes in POP patients.

Key word: Pelvic Organ Prolapse, Frailty, Cognitive Impairment, External Therapy, Elderly Women

INTRODUCTION

Pelvic organ prolapse (POP) is a common condition in elderly women characterized by a decline in the pelvic organs due to weakness of the pelvic floor support structures, which can cause symptoms such as pelvic pressure, urinary disorders, and decreased quality of life.1 Globally, the prevalence rate of POP in 2021 reached 2,769 per 100,000 women, with the highest prevalence in the age group ≥80 years, And the number of cases is expected to continue to increase as the population ages, and is expected to reach 156 million women worldwide by 2036. Estimates of the prevalence of POP varied between 1–31% in symptom-based surveys, 10–50% in physical examinations, and up to 65% in the combined approach, indicating a diversity of diagnostic methods used. Risk factors for POP include age, high parity, vaginal delivery, instrumental delivery, high

infant birth weight, increased body mass index, and levator ani muscle defects.2 In the geriatric population, patients undergoing POP surgery often have complex comorbid conditions including frailty, which is a clinical syndrome that describes physiological decline and increased susceptibility, which has been shown to be associated with an increased risk of postoperative complications, prolongation of the length of hospitalization, as well as failure of surgical therapy. In addition to frailty, cognitive impairment and postoperative cognitive dysfunction (POCD) are also of important concern in elderly patients, as they can affect functional recovery, therapy adherence, and long-term support needs after surgery.3 4 However, there is still not much literature evaluating the relationship between frailty, cognitive status, and POP surgery outcomes that are still limited on the basis for this systematic review.

METHODOLOGY

This study is a systematic review prepared based on the PRISMA guidelines to assess the results of therapy in women with pelvic organ prolapse (POP) accompanied by cognitive impairment and/or frailty. The population in this review was women with a diagnosis of POP of various stages or types. Included studies should report cognitive impairment and/or frailty. The interventions reviewed included all forms of POP therapy, both conservative such as pesarium, pelvic floor muscle training, and expectant management, as well as surgical therapies such as colpocleisis, vaginal hysterectomy, sacrocolpopexy, uterosacral ligament suspension, and anterior or posterior repair. Evaluated outcomes included at least one of the following: success or failure of therapy, recurrence of POP, therapeutic complications, intolerance or discontinuation of pessarium, reoperation, hospital readmission, mortality, and quality of life using validated instruments. Included studies include randomized controlled trials, prospective and retrospective cohort studies, case-control studies, and analytical cross-sectional studies published in full-text articles in English. Studies such as case reports, small case series (<5 patients), narrative reviews, systematic reviews, meta-analyses, editorials, letters, opinions, animal studies, as well as studies without a POP diagnosis, no reports of frailty or cognitive impairment, or without therapeutic outcomes were excluded from the analysis. Literature searches were conducted on PubMed, OpenAlex, and ScienceDirect databases for articles published in the last 10 years up to the time of the last search, with a tailored search strategy for each database.

RESULTS

Of the 163 studies obtained, as many as two studies were found that met the research inclusion criteria. Two cohort studies from the United States evaluated the relationship between frailty and cognitive status in women with pelvic organ prolapse (POP) who underwent surgery. The study by Erekson et al. (2025) is a nested prospective cohort study in a 3-arm randomized clinical trial conducted at 9 medical centers in the United States with a total of 145 female participants.

All participants were women aged at least 65 years with an average age of 72.0 ± 5.2 years. The majority of the sample (88%) identified as White. Participants were women who had a total post-hysterectomy with symptomatic pelvic organ prolapse, specifically vaginal vault prolapse that extends beyond the hymen. As many as 22% of participants had a history of previous prolapse surgery.

A functional comorbidity index of ≥3 score was found in 57% of participants, covering arthritis, osteoporosis, depression, visual impairment, and upper gastrointestinal disease. Cognitive function was assessed using the Mini-Cog which is part of the Robinson Frailty Index, with the interpretation of the Mini-Cog score ≤3 categorized as cognitive impairment. It was found that 32% (46/145) of participants

had a Mini-Cog score of ≤3 at baseline. Frailty was assessed with the Robinson Frailty Index and Timed Up and Go (TUG), with 33% (48/145) of participants categorized as prefrail or frail, and 32 participants had a combined condition of frailty and mobility impairment.

Participants underwent randomization to three procedures, namely vaginal native tissue repair, abdominal sacral colpopexy, or transvaginal mesh repair, with additional procedures for midurethral sling (48%), anterior repair (54%), and posterior/perineophytic repair (59%). The results showed that frail patients had a 2 times higher risk of treatment failure (aHR 2.06) than non-frail patients. Failure includes a recurrence of prolapse beyond the hymen or a re-bothersome symptom. Despite low medical complications, frail patients significantly need additional social support in the first 6 weeks postoperatively compared to non-frails (19% to 6%). However, all groups reported sustained improvement in quality of life up to 36 months of follow-up. No association was found between age (≥65 vs <65 years) and treatment failure.

The study by Reddy et al. (2022) was a large retrospective cohort in the United States with a total of 107,890 women who underwent POP surgery with an average age of 73.3 ± 6 years. Frailty is categorized using the Claims-Based Frailty Index (CFI) into not frail (51.1%), pre-frail (44.6%), mildly frail (4.0%), and moderately to severely frail (0.3%). Types of POP surgery included anterior/posterior repair (30%), apical repair (7.5%), combination (20.4%), surgery with hysterectomy (34.8%), and colpocleisis (7.3%). The results showed that frailty was strongly associated with an increased risk of adverse surgical outcomes. Compared to non-frail patients, patients with moderate to severe frailty had a 2.8 times higher risk of developing complications within 30 days (excluding UTIs). The most frequent complications were urinary tract infections (13.7%) and cardiovascular complications (1.8%), with the UTI rate reaching 33.9% in the very fragile group. In addition, frail patients had a 3.1 times higher risk of undergoing a ≥3-day hospitalization, with a difference in long hospitalization reaching 26.2% in the very fragile group compared to 3.4% in the non-fragile group. The study also showed that frailty was more associated with postoperative complications than chronological age. In this study, there is a potential for positive selection bias because surgery is more frequent in healthier patients.

DISCUSSION

The findings of these two studies consistently show that frailty is a stronger predictor of chronological age in determining postoperative outcomes in pelvic organ prolapse patients. Erekson et al. (2025) showed that frail patients had a twice the risk of treatment failure despite relatively low medical complications and the entire group still experienced an improvement in quality of life for up to 36 months. This emphasizes that frailty affects functional outcomes and postoperative support needs. Correspondingly, Reddy et al. (2022) showed that frailty has a dose-dependent relationship with an increase in postoperative complications, including urinary tract infections, cardiovascular complications, and longer length of hospitalization. The risk of hospitalization ≥3 days was significantly increased in the frail group, indicating a greater clinical burden in patients with higher frailty status.

Both studies also confirm that chronological age is not the primary predictor of surgical outcomes, as no significant association between age and treatment failure was found in the Erekson et al. study, while Reddy et al. showed that the effect of age was weaker than frailty in predicting postoperative complications. This reinforces the importance of using frailty and cognitive impairment assessments in preoperative evaluation rather than considering age alone. In addition, the use of assessment tools

such as Mini-Cog, Robinson Frailty Index, Timed Up and Go (TUG), and Claims-Based Frailty Index (CFI) suggests that multidimensional approaches to frailty and cognitive function can help predict postoperative risk more accurately. The study by Erekson et al. also showed that frail patients are more in need of social support in the early postoperative period, which suggests important implications for discharge planning after hospitalization and follow-up care

However, there is an important limitation in the Reddy et al. study, namely the potential for positive selection bias, where healthier patients are more often selected to undergo surgery than patients who are highly frail. In addition, a relatively small proportion of frail patients may limit the generalization of outcomes in severe frail populations. Overall, the evidence from these two studies confirms that frailty is the main prognostic factor in determining the outcome of pelvic organ prolapse surgery, both in terms of complications, length of hospitalization, and the need for postoperative support. These findings support the integration of frailty assessment in preoperative clinical decision-making to improve patient outcomes.

CONCLUSION

Based on the two cohort studies analyzed, frailty and cognitive impairment were shown to be the primary predictors of postoperative outcomes in women with pelvic organ prolapse (POP) undergoing surgery. Both studies consistently show that patients with frail status have a higher risk of adverse clinical outcomes, including treatment failure, postoperative complications, and extended duration of hospitalization. In addition, chronological age did not show a consistent relationship with surgical outcomes, thus confirming that frailty assessments are more relevant than age in predicting surgical outcomes. Despite this, frail patients can still experience improvements in long-term quality of life after surgery, suggesting that the benefits of the procedure can still be obtained in this population with proper patient selection.

However, the number of studies that specifically evaluate the relationship between frailty and cognitive function to pelvic organ prolapse surgery outcomes is still very limited. The primary focus that most studies assessed was general surgical outcomes, not cognitive and/or frailty. This suggests that there is a significant gap in the current literature. Therefore, further research with prospective design and more standardized frailty measurements and cognitive function is needed to strengthen the evidence, evaluate the long-term impact, and help optimize clinical decision-making in this patient population.

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