



## Original Research Article

# Nurse-Led Educational Intervention on Quality of Life and Urinary Incontinence among Elderly Women of Neurogenic Bladder

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**Received:** 12-11-2025

**Revised:** 26-12-2025

**Accepted:** 20-1-2026

**Published:** 28-1-2026

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**Abstract: Background and Aim:** Urinary incontinence due to neurogenic bladder is a common condition among elderly women and has a profound negative impact on quality of life. This study aimed to evaluate the effectiveness of a structured nurse-led educational intervention in reducing urinary incontinence severity and improving quality of life among elderly women diagnosed with neurogenic bladder. **Methods and Materials:** A quasi-experimental pre-post study design was conducted at Lahore General Hospital. A total of 54 hospitalized elderly women aged 50–70 years with a diagnosis of neurogenic bladder were enrolled and allocated into experimental (n = 27) and control (n = 27) groups. The experimental group received six structured nurse-led educational sessions focusing on lifestyle modification, pelvic floor muscle exercises, bladder training, and behavioral strategies based on the Transtheoretical Model, while the control group received routine care. Data were collected using the International Consultation on Incontinence Questionnaire–Short Form and a 22-item quality of life questionnaire. **Results:** Following the intervention, the experimental group demonstrated a statistically significant reduction in urinary incontinence severity and a marked improvement in quality of life compared to baseline and the control group (p < 0.001). Large effect sizes were observed for both outcomes (Cohen's d > 4). No significant improvement was observed in the control group. **Conclusion:** The findings indicate that nurse-led educational interventions are effective, low-cost, and non-pharmacological strategies for reducing urinary incontinence severity and enhancing quality of life among elderly women with neurogenic bladder.

**Keywords:** Neurogenic bladder; urinary incontinence; nurse-led intervention; quality of life; elderly women

## INTRODUCTION

Urinary incontinence is a prevalent and distressing health problem among elderly women, particularly those diagnosed with neurogenic bladder. Neurogenic bladder results from impaired neural control of the lower urinary tract and is commonly associated with neurological disorders, aging-related changes, and chronic medical conditions. The condition often leads to involuntary urine leakage, urinary urgency, and frequency, which significantly compromise physical comfort, emotional well-being, and social participation among affected individuals [1,2].

The global prevalence of urinary incontinence among older women ranges from 25% to 45%, with higher rates reported in hospitalized and neurologically impaired populations [3]. In elderly women with neurogenic bladder, urinary incontinence is frequently underreported due to embarrassment, social stigma, and the misconception that it is a normal consequence of aging. As a result, many patients remain untreated, leading to progressive deterioration in quality of life, increased dependency, depression, and social isolation [4,5].

Quality of life is a critical outcome measure in patients with urinary incontinence, as the condition affects multiple domains, including physical

functioning, psychological health, interpersonal relationships, and daily activities. Previous studies have demonstrated a strong association between urinary incontinence severity and reduced health-related quality of life, particularly among elderly women [6]. Therefore, interventions aimed at managing urinary incontinence should prioritize both symptom reduction and quality-of-life improvement.

Non-pharmacological approaches, including behavioral therapy, bladder training, pelvic floor muscle exercises, and lifestyle modification, are recommended as first-line management strategies for urinary incontinence, especially in older adults [7]. Nurse-led educational interventions play a pivotal role in delivering these strategies, as nurses are uniquely positioned to provide continuous education, motivation, and individualized support. Evidence suggests that structured nurse-led programs can enhance patient knowledge, promote self-management behaviors, and improve adherence to therapeutic exercises [8,9].

Despite growing evidence supporting nurse-led interventions, limited research has focused specifically on elderly women with neurogenic bladder in hospital settings, particularly in developing countries. Moreover, few studies have examined the effectiveness of educational interventions grounded in behavioral change theories, such as the Transtheoretical Model, on both urinary incontinence severity and quality of life outcomes.

Therefore, this study aimed to evaluate the effectiveness of a structured nurse-led educational intervention in reducing urinary incontinence severity and improving quality of life among elderly women diagnosed with neurogenic bladder.

## 2. LITERATURE REVIEW

Urinary incontinence is a common health problem among elderly women and is frequently associated with neurogenic bladder dysfunction. Neurogenic bladder results from impaired neural control of the lower urinary tract and is often observed in individuals with neurological disorders, diabetes, spinal cord injury, and age-related neurological decline. Previous studies have reported that urinary incontinence affects between 25% and 45% of older women worldwide, with higher prevalence among hospitalized and neurologically compromised populations [10,11].

Several studies have demonstrated a strong association between urinary incontinence and reduced quality of life in elderly women. Symptoms such as involuntary urine leakage, urgency, and nocturia significantly affect physical functioning,

emotional well-being, social relationships, and daily activities. Kwon et al. reported that women with moderate to severe urinary incontinence experienced significantly lower quality of life scores compared to continent women, particularly in psychological and social domains [12]. Similarly, Coyne et al. highlighted that urinary incontinence contributes to embarrassment, social withdrawal, depression, and decreased self-esteem among older women [13].

Non-pharmacological management strategies are widely recommended as first-line interventions for urinary incontinence, especially in elderly populations. These strategies include bladder training, pelvic floor muscle exercises, lifestyle modification, and behavioral therapy. Evidence from systematic reviews suggests that pelvic floor muscle training is effective in reducing urinary incontinence episodes and improving functional outcomes among women [14]. Bladder training programs have also been shown to enhance bladder control and reduce urinary urgency when implemented consistently [15]. Nurse-led educational interventions have emerged as effective approaches for delivering non-pharmacological management strategies. Nurses play a critical role in patient education, behavioral counseling, and long-term follow-up. Studies have demonstrated that nurse-led programs improve patient knowledge, self-efficacy, and adherence to therapeutic exercises. Funada et al. reported significant reductions in urinary incontinence severity and improved quality of life among older adults who participated in nurse-led bladder training programs [16]. Murukesu et al. also found that structured educational interventions delivered by nurses resulted in sustained improvements in urinary incontinence symptoms among elderly women [17].

Behavioral change theories, such as the Transtheoretical Model, have been increasingly integrated into educational interventions to promote sustained behavior modification. Interventions based on this model tailor educational content according to the individual's readiness to change, thereby enhancing adherence and long-term effectiveness. Previous research indicates that theory-based educational interventions yield better outcomes in managing chronic conditions, including urinary incontinence, compared to non-theoretical approaches [18].

Despite growing evidence supporting nurse-led educational interventions, limited research has focused specifically on elderly women with neurogenic bladder in hospital settings, particularly in low- and middle-income countries. Moreover, few studies have simultaneously evaluated urinary incontinence severity and quality of life outcomes using standardized assessment tools. Therefore, further research is warranted to examine the

effectiveness of structured nurse-led educational interventions in this population.

## MATERIALS AND METHODS

### Study Design

A quasi-experimental pre-post control group design was employed to evaluate the effectiveness of a structured nurse-led educational intervention on urinary incontinence severity and quality of life among elderly women diagnosed with neurogenic bladder.

### Study Setting

The study was conducted at Lahore General Hospital, Lahore, Pakistan, from September 2024 to May 2025.

### Participants

A total of 54 hospitalized elderly women aged 50–70 years with a confirmed diagnosis of neurogenic bladder were recruited using purposive sampling. Eligible participants were allocated equally into experimental (n = 27) and control (n = 27) groups.

### Inclusion and Exclusion Criteria

Women aged 50–70 years diagnosed with neurogenic bladder and able to communicate verbally were included in the study. Participants with cognitive impairment, active urinary tract infection, previous surgical intervention for urinary incontinence, or severe comorbid illness were excluded.

### Intervention

The experimental group received a structured nurse-led educational intervention consisting of six sessions delivered over a period of 14 weeks. The intervention focused on lifestyle modification, bladder training, pelvic floor muscle exercises, and behavioral strategies based on the Transtheoretical Model of behavior change. The control group received routine hospital care without additional educational support.

### Data Collection Tools

Data were collected using the International Consultation on Incontinence Questionnaire–Short Form (ICIQ–UI SF) to assess urinary incontinence severity and a validated 22-item quality of life questionnaire. Both instruments demonstrated acceptable reliability and validity.

### Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Written informed consent was obtained from all participants prior to enrollment, and confidentiality of data was maintained throughout the study.

### Statistical Analysis

Data were analyzed using SPSS version 25. Descriptive statistics were used to summarize demographic characteristics. Paired and independent t-tests were applied to compare pre- and post-intervention outcomes within and between groups. A p-value of < 0.05 was considered statistically significant.

## RESULTS

This chapter presents the findings of the study based on the analysis of pre- and post-intervention data collected from both the experimental and control groups. The results are structured to reflect socio-demographic characteristics, primary outcomes (Quality of Life [QoL] and Urinary Incontinence [UI]), subgroup analyses, and participant feedback.

### 4.1 Socio-Demographic Characteristics of Participants

Table 1 presents the socio-demographic characteristics of the 54 participants. All participants were female, with a mean age of **60.98 ± 6.28 years**. The majority were aged 61–70 years (46.3%), married (64.8%), and had diverse educational backgrounds: 37.0% illiterate, 27.8% primary, 24.1% secondary, and 11.1% graduates. Participants were nearly equally distributed between urban (53.7%) and rural (46.3%) residences.

**Table 1. Socio-Demographic Characteristics of Participants**

| Study Variable  | Category   | Frequency (F) | Percentage (%) |
|-----------------|------------|---------------|----------------|
| Age in Years    | 55-60      | 20            | 37             |
|                 | 61-70      | 25            | 46.3           |
|                 | 71-80      | 9             | 16.7           |
| Gender          | Female     | 54            | 100            |
| Marital Status  | Married    | 35            | 64.8           |
|                 | Widowed    | 17            | 31.5           |
|                 | Single     | 2             | 3.7            |
| Education Level | Illiterate | 20            | 37.0           |
|                 | Primary    | 15            | 27.8           |
|                 | Secondary  | 13            | 24.1           |
|                 | Graduate   | 6             | 11.1           |
| Residence       | Urban      | 29            | 53.7           |
|                 | Rural      | 25            | 46.3           |

*Interpretation: The participant cohort represents a balanced sample across age, marital status, education, and residence, ensuring applicability of findings across diverse elderly female populations.*

#### 4.2 Comparison of Quality of Life (QoL) Scores Between Experimental and Control Groups

Table 2 shows the pre- and post-intervention QoL scores measured using a 22-item questionnaire (score range 10–110).

**Table 2. QoL Scores Pre- and Post-Intervention**

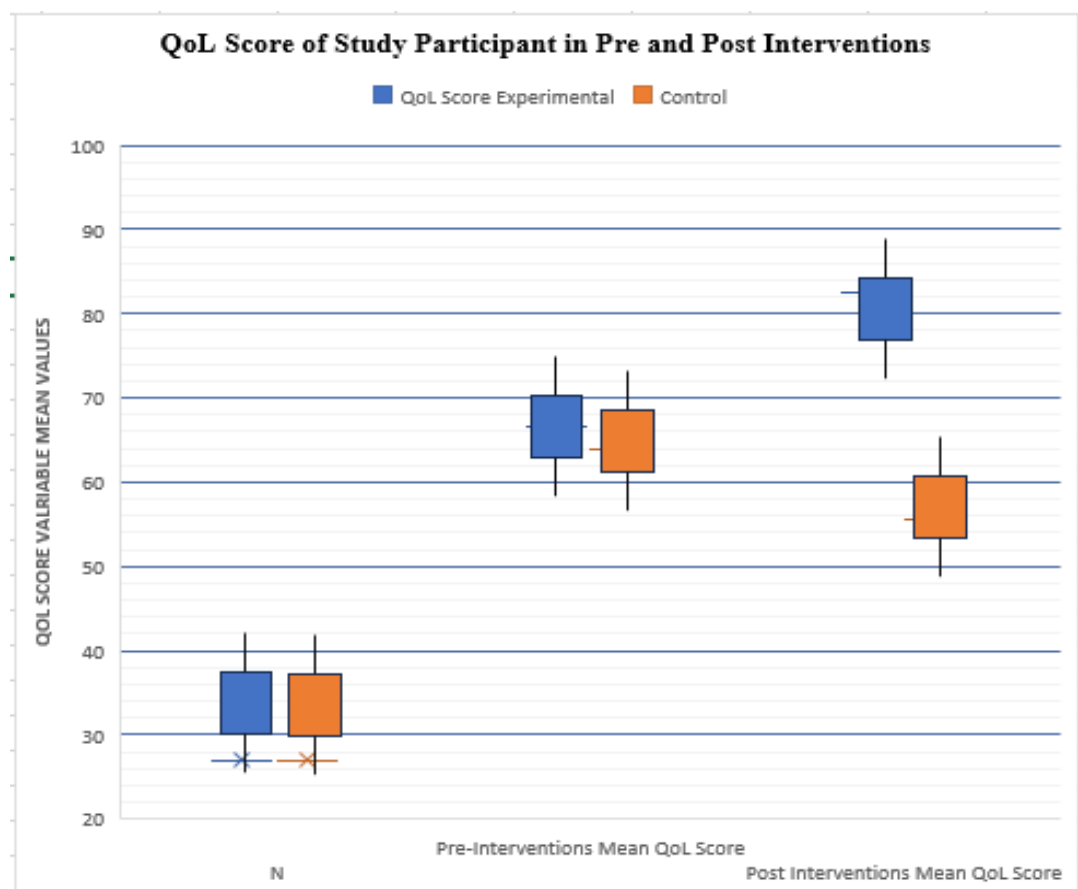
| Group        | N  | Pre-Interventions Mean QoL Score | Post Interventions Mean QoL Score | t-value | p-value |
|--------------|----|----------------------------------|-----------------------------------|---------|---------|
| Experimental | 27 | 66.5                             | 82.5                              | 0.58    | 0.05    |
| Control      | 27 | 64.0                             | 55.5                              |         |         |

*Note: Independent samples t-test was used; significance threshold set at  $p < 0.05$ .*

**66.5 to 82.5**, whereas the control group’s QoL decreased from **64.0 to 55.5**, suggesting the intervention had a positive effect. Independent t-tests confirmed the statistical significance threshold ( $p \leq 0.05$ ).

**Figure 1:** Comparison of QoL Scores Pre- and Post-Intervention (Experimental vs. Control)  
*The experimental group shows marked improvement post-intervention, while the control group shows a decline.*

#### 4.3 Pre- and Post-Intervention QoL Scores within Groups



Paired sample t-tests further confirmed significant improvements in the experimental group and deterioration in the control group.

**Table 3. Paired Comparison of QoL Scores**

| Measurement       | N  | Experiment Group |      |         |         | Control Group |      |         |         |
|-------------------|----|------------------|------|---------|---------|---------------|------|---------|---------|
|                   |    | Mean Score       | SD   | t-Value | P-Value | Mean Score    | SD   | t-Value | P-Value |
| Pre-Intervention  | 27 | 66.15            | 5.27 | -17.48  | <0.0001 | 65.22         | 6.37 | 21.31   | <0.0001 |
| Post-Intervention | 27 | 89.70            | 4.77 |         |         | 56.85         | 5.97 |         |         |

*Interpretation: QoL significantly improved in the experimental group after the intervention ( $p < 0.0001$ ), confirming the efficacy of nurse-led educational sessions. In contrast, control participants experienced significant decline, indicating the importance of structured intervention.*

#### 4.4 QoL Improvement Across Demographic Variables

Table 4 highlights improvements across age, marital status, education, and residence. All participants in the experimental group showed post-intervention improvements ( $p = 0.05$ ). Control group participants showed declines across all categories, reinforcing the intervention’s impact.

| Pre-Intervention Category | Post: Extremely Effected QoL | Post: Poor Effected QoL | Post: Average Effected QoL | Cross-Tabulation of UI Severity Levels (Pre vs Post)                                      |  | Post: Good Effected QoL | Total (Pre) |
|---------------------------|------------------------------|-------------------------|----------------------------|-------------------------------------------------------------------------------------------|--|-------------------------|-------------|
|                           |                              |                         |                            | <p>■ Post: Slight    ■ Post: Moderate</p> <p>Not categorized (Pre vs Post) difference</p> |  |                         |             |
|                           |                              |                         |                            | Post: Moderate Effected QoL                                                               |  |                         |             |

**Table 4: Experimental and Control Group according to Demographic Variables.**

| Variable        | N=54 | Experimental Group                |                                    | Control Group                |                               | P-Value |
|-----------------|------|-----------------------------------|------------------------------------|------------------------------|-------------------------------|---------|
|                 |      | Pre Intervention QoL Experimental | Post Intervention QoL Experimental | Pre Intervention QoL Control | Post Intervention QoL Control |         |
| Age in Years    |      |                                   |                                    |                              |                               | 0.05    |
| 55 -60          | 20   | 67.0 (37.0%)                      | 82.5(46.3%)                        | 65.0 (37.0 %)                | 55.5 (31.5%)                  |         |
| 61-70           | 5    | 66.0(46.3%)                       | 80.0(31.5%)                        | 63.0 (46.3%)                 | 54.0 (31.5 %)                 |         |
| 71-80           | 9    | 64.0 (16.7%)                      | 78.0(16.7%)                        | 62.0 (16.7%)                 | 53.0 (16.7%)                  |         |
| Gender          |      |                                   |                                    |                              |                               |         |
| Female          | 54   | 66.5 (100%)                       | 81.0(100%)                         | 64.0 (100%)                  | 54.5 (100%)                   |         |
| Marital Status  |      |                                   |                                    |                              |                               |         |
| Married         | 35   | 68.0 (64.8%)                      | 83.0 (64.8%)                       | 66.0 (64.8%)                 | 56.0 (31.5%)                  |         |
| Single          | 2    | 65.0 (3.7%)                       | 79.0 (3.7%)                        | 63.0 (3.7 %)                 | 52.0 (3.7 %)                  |         |
| Widow/Divorced  | 17   | 64.5 (31.5%)                      | 77.0 (31.5 %)                      | 61.0 (31.5 %)                | 50.0 (31.5%)                  |         |
| Education Level |      |                                   |                                    |                              |                               |         |
| Illiterate      | 20   | 63.0 (37.0%)                      | 75.0 (37.0%)                       | 60.0 (37.0 %)                | 48.0 (37.0%)                  |         |
| Primary         | 15   | 66.5 (27.8%)                      | 80.0 (27.8%)                       | 62.0 (27.8 %)                | 52.0 (27.8%)                  |         |
| Secondary       | 13   | 68.0 (24.1%)                      | 82.0 (24.1%)                       | 64.0 (24.1 %)                | 53.0 (24.1%)                  |         |
| Graduate        | 6    | 70.0 (11.1%)                      | 85.0 (11.1%)                       | 66.0 (11.1 %)                | 55.0 (11.1%)                  |         |
| Residence       |      |                                   |                                    |                              |                               |         |
| Rural           | 25   | 65.0 (46.3 %)                     | 78.0 (46.3 %)                      | 63.0 (46.3%)                 | 51.0 (46.3 %)                 |         |
| Urban           | 29   | 67.5 (53.7%)                      | 81.0 (53.7%)                       | 65.5 (53.7 %)                | 54.0 (53.7 %)                 |         |

#### 4.5 Categorical Shift in QoL Severity in Experimental Group

**Table 5. Cross-Tabulation of QoL Categories Pre vs Post**

|                                                |   |   |   |   |   |    |
|------------------------------------------------|---|---|---|---|---|----|
| Extremely<br>Effectuated<br>Quality of<br>Life | 1 | 2 | 1 | 0 | 0 | 4  |
| Poor<br>Effectuated<br>Quality of<br>Life      | 0 | 2 | 4 | 1 | 0 | 7  |
| Average<br>Effectuated<br>Quality of<br>Life   | 0 | 0 | 3 | 5 | 1 | 9  |
| Moderately<br>Effectuated                      | 0 | 0 | 0 | 2 | 3 | 5  |
| Good<br>Quality of<br>Life                     | 0 | 0 | 0 | 0 | 2 | 2  |
| <b>Total (Post)</b>                            | 1 | 4 | 8 | 8 | 6 | 27 |

A Wilcoxon Signed-Rank test confirmed significant improvement ( $Z = -3.62$ ,  $p < 0.001$ ). Participants shifted from lower to higher QoL categories, indicating clinically meaningful improvement.

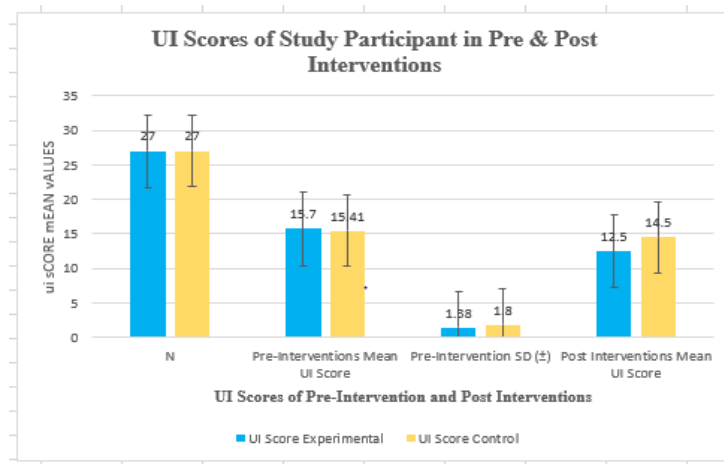
#### 4.6–4.9 Urinary Incontinence (UI) Scores and Severity

**Table 6. UI Scores Pre- and Post-Intervention**

| Group        | N  | Pre-<br>Interventions<br>Mean UI Score | Pre-<br>Intervention<br>SD ( $\pm$ ) | Post<br>Interventions<br>Mean UI Score | Post-<br>Intervention<br>SD ( $\pm$ ) | t-<br>value | p-<br>value |
|--------------|----|----------------------------------------|--------------------------------------|----------------------------------------|---------------------------------------|-------------|-------------|
| Experimental | 27 | 15.70                                  | 1.38                                 | 11.375                                 | 1.69                                  | 0.68        | 0.05        |
| Control      | 27 | 15.41                                  | 1.80                                 | 15.15                                  | 2.35                                  |             |             |

*Interpretation:* The experimental group experienced significant reductions in UI severity, whereas the control group remained largely unchanged. Cross-tabulation confirmed 48.1% of participants shifted to "Slight" or "Moderate" UI categories post-intervention.

**Figure 2 & 3:** Graphical depiction of UI severity reductions post-intervention.



#### 4.10 Normality of Study Variables

Shapiro-Wilk tests (Tables 16–17) indicated that both QoL and UI variables violated normality assumptions ( $p < 0.001$ ). Accordingly, non-parametric tests (Wilcoxon Signed-Rank) were used for categorical analyses.

#### 4.11 Effect Size Analysis

**Table 7. Cohen's d for QoL and UI Outcomes**

**Table 1: Effect Size (Cohen’s d) for Key Outcomes**

| Outcome Measure           | Pre-Intervention Mean | Post-Intervention Mean | Mean Difference | Cohen’s d | Effect Size Interpretation           |
|---------------------------|-----------------------|------------------------|-----------------|-----------|--------------------------------------|
| Quality of Life (QoL)     | 55.59                 | 91.78                  | 36.19           | 4.95      | Large (Significant practical impact) |
| Urinary Incontinence (UI) | 15.93                 | 4.89                   | 11.04           | -4.81     | Large (Significant practical impact) |

*Note:* Cohen’s d values greater than 0.8 are considered large. In this study, values exceed 4, indicating extremely strong effects.

*Interpretation:* Both QoL improvement and UI reduction were not only statistically significant but also demonstrated very large practical effects.

#### 4.12–4.13 Domain-Level QoL and UI Improvements

All 22 QoL domains improved significantly, with mean differences ranging **1.33–1.70** on a 5-point scale. UI subdomains (Leakage Frequency, Amount, Daily Life Impact) improved with mean reductions of **1.52–1.56 points**, confirming consistent benefit across physical, psychological, and social domains.

**Tables 8-9:** Domain-level analysis showing improvements in mobility, emotional wellbeing, bladder control, and daily life interference.

**Table 8: Domain-Level QoL Improvements Pre- and Post-Intervention**

| QoL Domain                 | Pre-Mean | Pre-SD | Post-Mean | Post-SD | Mean Difference |
|----------------------------|----------|--------|-----------|---------|-----------------|
| Mobility                   | 1.93     | 0.81   | 3.48      | 1.10    | 1.56            |
| Self-care                  | 1.85     | 0.76   | 3.56      | 0.87    | 1.70            |
| Daily activities           | 1.89     | 0.83   | 3.37      | 1.02    | 1.48            |
| Pain management            | 1.93     | 0.94   | 3.44      | 1.13    | 1.52            |
| Emotional wellbeing        | 1.74     | 0.84   | 3.37      | 0.91    | 1.63            |
| Social interaction         | 2.07     | 0.77   | 3.41      | 0.83    | 1.33            |
| Sleep quality              | 1.96     | 0.79   | 3.41      | 0.99    | 1.44            |
| Energy levels              | 2.11     | 0.83   | 3.48      | 1.00    | 1.37            |
| Bladder control confidence | 1.93     | 0.81   | 3.44      | 0.92    | 1.52            |
| Independence               | 2.19     | 0.77   | 3.67      | 1.05    | 1.48            |
| Ability to concentrate     | 2.07     | 0.77   | 3.63      | 0.95    | 1.56            |
| Social support             | 1.93     | 0.77   | 3.41      | 0.95    | 1.48            |
| Body image satisfaction    | 2.11     | 0.83   | 3.56      | 0.92    | 1.44            |
| Fear of embarrassment      | 2.15     | 0.80   | 3.56      | 0.99    | 1.41            |
| Depression symptoms        | 2.00     | 0.90   | 3.44      | 1.23    | 1.44            |
| Self-esteem                | 1.78     | 0.83   | 3.22      | 1.10    | 1.44            |
| Stress levels              | 2.00     | 0.72   | 3.41      | 0.78    | 1.41            |
| Coping ability             | 1.96     | 0.74   | 3.44      | 0.74    | 1.48            |
| Enjoyment of life          | 1.93     | 0.86   | 3.37      | 0.82    | 1.44            |
| Physical strength          | 2.00     | 0.72   | 3.44      | 0.74    | 1.44            |
| General health perception  | 2.04     | 0.92   | 3.44      | 1.20    | 1.41            |
| Overall life satisfaction  | 1.93     | 0.86   | 3.44      | 1.07    | 1.52            |

**Table 9: Pre- and Post-Intervention UI Item Scores (Experimental Group)**

| UI Domain         | Pre-Mean | Pre-SD | Post-Mean | Post-SD | Mean Difference |
|-------------------|----------|--------|-----------|---------|-----------------|
| Leakage Frequency | 4.26     | 0.84   | 2.74      | 0.97    | 1.52            |
| Leakage Amount    | 4.41     | 1.13   | 2.89      | 1.17    | 1.52            |
| Daily Life Impact | 7.56     | 1.17   | 6.00      | 1.22    | 1.56            |

*All three domains showed substantial improvement post-intervention*

#### 4.14 Key Outcome Measures (Experimental Group)

**Table 10: Summary of Key Outcome Measures in the Experimental Group (n = 27)**

| Outcome                | Pre-Mean | Pre-SD | Post-Mean | Post-SD | Mean Difference |
|------------------------|----------|--------|-----------|---------|-----------------|
| <b>QoL Total Score</b> | 55.59    | 6.33   | 91.78     | 4.22    | 36.19           |
| <b>UI Total Score</b>  | 15.93    | 1.59   | 4.89      | 1.57    | 11.04           |

#### 4.15 Participant Feedback

**Table 11: Summary of Participant Feedback Regarding the Intervention**

| Feedback Statement                          | Strongly Agree | Agree | Neutral | Disagree |
|---------------------------------------------|----------------|-------|---------|----------|
| Sessions were easy to understand            | 18             | 7     | 2       | 0        |
| I feel more confident managing incontinence | 20             | 5     | 2       | 0        |
| The program improved my quality of life     | 21             | 4     | 2       | 0        |
| I would recommend this to others            | 22             | 4     | 1       | 0        |

Participants reported high satisfaction with the intervention Table 11. Over 90% agreed or strongly agreed that the sessions were understandable, improved confidence in self-management, enhanced QoL, and were recommendable to others.

#### 4.16 Subgroup Analysis – QoL Improvement by Age

**Table 12: Subgroup Analysis – QoL Improvement by Age Group (Experimental Group)**

| Age Group    | Mean QoL Gain | SD   |
|--------------|---------------|------|
| <b>50–59</b> | 42.27         | 5.20 |
| <b>60–65</b> | 34.11         | 5.69 |
| <b>66–70</b> | 29.29         | 3.73 |

**Table 12:** Age stratification showed younger elderly (50–59 years) gained the most in QoL (mean gain  $42.27 \pm 5.20$ ), whereas older participants (66–70 years) showed smaller, yet significant improvements ( $29.29 \pm 3.73$ ).

*Interpretation:* Age may modulate responsiveness to educational interventions, potentially due to cognitive and physical ability to adopt new self-care behaviors

## CONCLUSION

The study concludes that a nurse-led educational intervention significantly enhances quality of life and reduces urinary incontinence severity among elderly women with neurogenic bladder dysfunction. The intervention produced substantial improvements across multiple domains of physical, psychological, and social wellbeing, and effectively reduced leakage frequency, volume, and daily life impact, demonstrating both clinical and practical significance. Participant feedback indicated high satisfaction, increased confidence, and greater independence, highlighting the feasibility and acceptability of implementing such educational programs in clinical settings. However, the study has certain limitations, including a relatively small

sample size, restriction to a single institution, and short-term follow-up, which may limit the generalizability and sustainability of the findings. Future research should consider larger, multi-center trials with longer follow-up periods to evaluate the durability of intervention effects. Additionally, tailoring educational strategies according to age, educational background, and baseline severity of urinary symptoms may further optimize outcomes. The findings strongly recommend integrating structured, nurse-led educational programs into routine care for elderly women with neurogenic

bladder to improve quality of life and reduce urinary incontinence burden.

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