

Nurse-Led Integrated Symptom Management Intervention: Impact on Symptom Clusters, Psychological Distress, Functional Capacity, and Quality of Life among Women and Adults Attending Medical-Surgical and Obstetric- Gynecological Outpatient Clinics

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Abstract

Background: Women and adults attending medical-surgical and obstetric-gynecological outpatient clinics frequently experience multiple co-occurring symptoms, including pain, fatigue, sleep disturbances, gastrointestinal complaints, and psychological distress. When these symptoms occur in clusters, they may negatively affect functional capacity, self-care, daily activities, and overall quality of life. Nurse-led integrated symptom management interventions may provide a comprehensive approach that addresses interconnected physical and psychological symptoms through individualized education, self-management strategies, and continuous nursing support. **Aim:** The study aimed to evaluate the effect of a nurse-led integrated symptom management intervention on symptom clusters, psychological distress, functional capacity, and quality of life among women and adults attending medical-surgical and obstetric-gynecological outpatient clinics. **Methods:** A quasi-experimental one-group pretest–posttest

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design was used. A convenience sample of 100 women and adults attending medical-surgical and obstetric-gynecological outpatient clinics was recruited. Data were collected using a structured sociodemographic and clinical assessment tool, a symptom cluster assessment scale, a psychological distress assessment scale, a functional capacity assessment tool, and a quality-of-life scale. **Results:** Following implementation of the intervention, participants demonstrated marked improvement in overall symptom management. The proportion of participants reporting severe symptom burden and multiple co-occurring symptoms decreased, while favorable symptom-management behaviors increased. Psychological distress was significantly reduced, accompanied by significant improvements in functional capacity and quality of life. The observed improvements from pre-intervention to post-intervention assessment were statistically significant ($p < 0.001$). **Conclusion:** The nurse-led integrated symptom management educational intervention was effective in reducing symptom burden and psychological distress while improving functional capacity and quality of life among women and adults attending medical-surgical and obstetric-gynecological outpatient clinics. **Recommendations:** Nurse-led integrated symptom management programs should be incorporated into outpatient nursing practice, particularly for patients experiencing multiple concurrent symptoms. Regular symptom assessment, individualized education, self-management support, and structured nursing follow-up are recommended to promote functional independence and improve quality of life.

Keywords: *Functional Capacity, Nurse-Led Integrated Management Intervention, Psychological Distress, Quality of Life, Symptom Clusters, Women and Adults*

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Introduction

Women and adults attending medical-surgical and obstetric-gynecological outpatient clinics commonly experience a wide range of concurrent physical and psychological symptoms related to acute illness, chronic diseases, surgical conditions, gynecological disorders, and treatment-related problems. Pain, fatigue, sleep disturbance, gastrointestinal symptoms, weakness, anxiety, and depressive manifestations may occur simultaneously rather than as isolated complaints. The coexistence of several symptoms can increase overall symptom burden and interfere with patients' ability to perform daily activities, maintain self-care, and participate effectively in their treatment. Therefore, symptom assessment should extend beyond the evaluation of individual symptoms toward identifying patterns of co-occurring symptoms and their combined impact on patients' health and well-being (Xiao et al., 2016; Li et al., 2026).

Symptom clusters represent groups of two or more symptoms that occur together and may share common underlying mechanisms. Managing symptoms as interconnected clusters is particularly important because the presence of one symptom may intensify or contribute to another, resulting in a greater overall burden than that produced by individual symptoms alone. Evidence indicates that symptom clusters, including psychological-, sleep-, fatigue-, and disease-related symptom clusters, are associated with poorer health-related quality of life. Consequently, comprehensive assessment and collaborative management of multiple symptoms may be more appropriate than a single-symptom approach, particularly among patients with complex medical and surgical needs (Hernández-Aguilar et al., 2026).

Psychological distress is an important dimension of symptom burden among adults with health problems and may include anxiety, depressive symptoms, emotional tension, uncertainty, and difficulty coping with illness. Persistent physical symptoms can increase

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psychological distress, while psychological distress may, in turn, amplify the perception of pain, fatigue, sleep problems, and other symptoms. This reciprocal relationship can negatively influence functional capacity and reduce patients' ability to engage in healthy behaviors and self-care. Recent evidence supports the value of self-management interventions in improving quality of life and reducing depressive symptoms among individuals with chronic diseases, although effects may vary according to the type and duration of intervention **(Huang et al., 2024)**.

Functional capacity is another important outcome affected by multiple symptoms and psychological distress. Pain, fatigue, sleep disturbance, weakness, and emotional problems may restrict mobility, reduce participation in usual activities, impair work and family roles, and increase dependence on others. In this context, nursing interventions that combine symptom monitoring with education, self-care training, behavioral strategies, physical activity guidance, relaxation, and individualized counseling can help patients develop practical skills for managing symptoms in everyday life. Evidence from systematic reviews suggests that nurse-led self-management interventions can improve patient outcomes, while educational and self-management interventions represent an important component of contemporary nursing practice for people living with chronic and complex conditions **(Connolly, & Cotter, 2021)**.

Quality of life is a multidimensional outcome reflecting physical, psychological, social, and functional well-being and is particularly vulnerable to the cumulative effects of symptom burden and distress. Nurse-led interventions provide an opportunity to address these dimensions simultaneously because nurses can assess symptoms, identify individual needs, provide health education, reinforce self-management behaviors, and offer ongoing support and follow-up. Recent evidence indicates that structured self-management interventions can improve quality of life, self-efficacy, and depressive symptoms, while broader reviews of nursing interventions

suggest potential benefits for health-related quality of life. Therefore, an integrated nurse-led educational intervention that targets symptom clusters, psychological distress, functional capacity, and quality of life may provide a comprehensive approach for women and adults receiving outpatient medical-surgical and obstetric-gynecological care **(Ruksakulpiwat et al., 2026)**.

Significance of the Study

The significance of this study stems from the frequent occurrence of multiple coexisting physical and psychological symptoms among women and adults attending medical-surgical and obstetric-gynecological outpatient clinics. Symptoms such as pain, fatigue, sleep disturbance, gastrointestinal complaints, anxiety, and emotional distress may occur as interconnected symptom clusters, resulting in increased symptom burden, impaired daily functioning, and reduced quality of life. Therefore, an integrated approach that addresses multiple symptoms simultaneously rather than focusing on individual symptoms is important for providing comprehensive, patient-centered outpatient care. The study is also significant in emphasizing the role of nurses in systematic symptom assessment, individualized health education, self-management support, psychological support, and follow-up, thereby strengthening patients' ability to participate actively in managing their symptoms and maintaining their functional independence.

The study may provide practical evidence for incorporating a nurse-led integrated symptom management educational intervention into routine medical-surgical and obstetric-gynecological outpatient services. By addressing symptom recognition and monitoring, pain and fatigue management, sleep hygiene, nutrition and hydration, relaxation and stress management, physical activity, energy conservation, medication adherence, and self-care, the intervention may contribute to reducing symptom burden and psychological distress while improving functional capacity and quality of life. Furthermore, the findings may provide a useful

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nursing framework for early identification of patients with complex symptom patterns and guide future research concerning integrated symptom management, continuity of care, and patient-centered nursing interventions in outpatient settings.

Aim:

The study aimed to evaluate the effect of a nurse-led integrated symptom management intervention on symptom clusters, psychological distress, functional capacity, and quality of life among women and adults attending medical-surgical and obstetric-gynecological outpatient clinics.

Research hypotheses:

H1: Women and adults who receive the nurse-led integrated symptom management educational intervention will demonstrate a significant reduction in overall symptom-cluster severity after the intervention compared with their pre-intervention levels.

H2: Women and adults who receive the nurse-led integrated symptom management educational intervention will demonstrate a significant reduction in psychological distress after the intervention compared with their pre-intervention levels.

H3: Women and adults who receive the nurse-led integrated symptom management educational intervention will demonstrate a significant improvement in functional capacity after the intervention compared with their pre-intervention levels.

H4: Women and adults who receive the nurse-led integrated symptom management educational intervention will demonstrate a significant improvement in quality of life after the intervention compared with their pre-intervention levels.

H5: There will be a significant relationship between symptom-cluster burden, psychological distress, functional capacity, and quality of life among the studied women and adults after implementation of the intervention.

Subjects and Methods

Research Design:

A quasi-experimental one-group pretest–posttest design was used .

Setting:

The study was conducted in the medical-surgical and obstetric-gynecological outpatient clinics of Sohag University Hospitals, Sohag, Egypt. These clinics provide assessment, treatment, follow-up, health education, and nursing care for patients with various medical, surgical, gynecological, and obstetric-related health conditions.

Subjects and Sampling:

A convenience sample of 100 women and adults attending the selected outpatient clinics was recruited. Participants were selected .

Data Collection Tools

Data were collected using the following five tools:

Tool I: Structured Sociodemographic and Clinical Assessment Questionnaire

This tool was developed by the researchers after reviewing relevant literature to assess the sociodemographic and clinical characteristics of the studied women and adults. It consisted of two parts.

Part I: Sociodemographic characteristics, including age, sex, marital status, educational level, occupation, residence, and monthly income.

Part II: Clinical characteristics, including current diagnosis/health condition, duration of illness, previous hospitalization or surgery, number of chronic diseases, current medications, presence of pain, fatigue, sleep disturbance, gastrointestinal symptoms, and other concurrent symptoms.

Tool II: Memorial Symptom Assessment Scale (MSAS)

The **Memorial Symptom Assessment Scale (MSAS)** was used to assess the participants' multidimensional symptom burden. The MSAS evaluates a broad range of physical and psychological symptoms and assesses symptoms according to their frequency, severity, and distress. The scale includes symptoms such as lack of energy, pain, feeling drowsy, nausea, worrying, feeling sad, difficulty sleeping, lack of appetite, shortness of breath, dizziness, and other common symptoms. The MSAS is particularly appropriate for the present study because it permits assessment of multiple co-occurring symptoms and their subjective burden rather than evaluating a single symptom in isolation (**Portenoy et al., 1994**).

For each symptom experienced during the specified assessment period, participants reported how frequently the symptom occurred, how severe it was, and how much distress it caused. The instrument therefore provided a comprehensive assessment of overall symptom burden and facilitated identification of participants experiencing symptom clusters.

Scoring:

For frequency, symptoms were rated on a 4-point scale: 1 = rarely, 2 = occasionally, 3 = frequently, and 4 = almost constantly. Severity was rated from 1 = slight to 4 = very severe, while distress was rated from 0 = not at all to 4 = very much. The Global Distress Index (GDI) was calculated from the psychological symptom items, whereas the Physical Symptom Distress (PHYS) and Psychological Symptom Distress (PSYCH) subscale scores were calculated according to the original MSAS scoring procedure. Higher scores indicated greater symptom burden and distress.

Tool III: Depression Anxiety Stress Scales (DASS-21)

The **Depression Anxiety Stress Scales-21 (DASS-21)** was used to assess psychological distress among the studied participants. It is a shortened version of the original DASS and consists of 21 items distributed into three seven-item subscales: Depression, Anxiety, and Stress. Participants were asked to indicate how much

each statement applied to them during the preceding week. The scale was selected because it provides a brief and multidimensional assessment of negative emotional states that may accompany physical symptoms and chronic or recurrent health problems (**Lovibond & Lovibond, 1995**).

The Depression subscale assesses symptoms such as low mood, hopelessness, and lack of positive feelings. The Anxiety subscale assesses autonomic arousal, situational anxiety, and subjective feelings of fear. The Stress subscale assesses difficulty relaxing, irritability, tension, and over-reactivity. Together, the three dimensions provide an overall profile of psychological distress.

Scoring:

Each item is scored from **0 to 3**: 0 = did not apply to me at all, 1 = applied to me to some degree or some of the time, 2 = applied to me to a considerable degree or a good part of time, and 3 = applied to me very much or most of the time. Scores for each subscale are summed and multiplied by 2 to obtain scores comparable with the original 42-item DASS. For each subscale, higher scores indicate greater psychological distress. The severity categories are: Depression: 0–9 normal, 10–13 mild, 14–20 moderate, 21–27 severe, and ≥ 28 extremely severe; Anxiety: 0–7 normal, 8–9 mild, 10–14 moderate, 15–19 severe, and ≥ 20 extremely severe; **Stress**: 0–14 normal, 15–18 mild, 19–25 moderate, 26–33 severe, and ≥ 34 extremely severe.

Tool IV: Barthel Index of Activities of Daily Living

The **Barthel Index (BI)** was used to assess participants' functional capacity and level of independence in performing activities of daily living. The index evaluates ten activities: feeding, bathing, grooming, dressing, bowel control, bladder control, toilet use, transfers, mobility, and stair climbing. The tool provides a simple measure of the extent to which health-related symptoms and physical limitations affect patients' ability to perform essential daily activities independently (**Mahoney & Barthel, 1965**).

The Barthel Index was particularly relevant to the present study because symptom burden may interfere with mobility, self-care, personal hygiene, toileting, feeding, and other routine activities. Assessment before and after the intervention allowed evaluation of whether improved symptom-management skills were accompanied by improved functional independence.

Scoring:

Each activity is scored according to the participant's level of independence. The total score ranges from 0 to 100, with higher scores indicating greater independence. A commonly used interpretation is: 0–20 = total dependence; 21–60 = severe dependence; 61–90 = moderate dependence; 91–99 = slight dependence; and 100 = complete independence. For some activities, such as transfers and mobility, the assigned points vary according to the degree of assistance required.

Tool V: WHOQOL-BREF

The **World Health Organization Quality of Life-BREF (WHOQOL-BREF)** was used to assess the participants' perceived quality of life. The WHOQOL-BREF is a 26-item abbreviated version of the WHOQOL-100 and assesses quality of life across four major domains: physical health, psychological health, social relationships, and environment. It also contains two general items assessing overall quality of life and general health. The instrument is suitable for evaluating the multidimensional impact of illness and nursing interventions on patients' perceived well-being (**World Health Organization, 1996**).

The physical health domain includes activities of daily living, dependence on medical treatment, energy and fatigue, mobility, pain and discomfort, sleep and rest, and work capacity. The psychological domain includes positive feelings, thinking, learning, memory and concentration, self-esteem, body image, and negative feelings. The social relationships domain addresses personal relationships, social support, and sexual activity, while the environmental domain includes physical safety, home environment, financial resources, access

to health services, opportunities for recreation, and transportation.

Scoring:

Each item is scored on a **5-point Likert scale**. Negatively worded items are reverse scored according to the WHOQOL-BREF scoring procedure. Domain scores are calculated by summing the relevant items and transforming the scores to a **0–100 scale**, with higher scores indicating better quality of life. The two general items provide separate assessments of overall perceived quality of life and satisfaction with health. The WHOQOL-BREF does not provide a single total quality-of-life score; interpretation is based primarily on the four domain scores and the two general items.

Validity

The data collection tools were reviewed by a panel of five experts in Medical-Surgical Nursing, Obstetric and Gynecological Nursing, Psychiatric Nursing, and Community Health Nursing to assess their content validity, relevance, clarity, comprehensiveness, and appropriateness for the studied population. Necessary modifications were made according to their recommendations before the final administration of the tools.

Reliability

The internal consistency and reliability of the study tools were assessed using Cronbach's alpha coefficient. The obtained reliability coefficients indicated acceptable to high internal consistency among the items of the symptom cluster assessment scale, psychological distress assessment scale, functional capacity assessment tool, and quality-of-life scale, supporting their suitability for use in the present study.

Pilot Study

A pilot study was conducted on 10% of the total sample (10 participants) who met the study eligibility criteria. The pilot study was performed to assess the clarity, applicability, sequence, and estimated time required to complete the data collection tools and to

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identify any potential difficulties in their administration. Participants included in the pilot study were excluded from the main study sample to avoid duplication of data.

Ethical Considerations

Ethical approval was obtained from the responsible scientific and ethical committee (No/ 167-2024) before commencement of the study. The purpose, procedures, potential benefits, and voluntary nature of participation were explained to each participant. Written informed consent was obtained before data collection. Participants were informed that they had the right to refuse or withdraw from the study at any time without affecting their care. Confidentiality and privacy were maintained throughout the study, and collected data were used only for scientific research purposes.

Phases of the Intervention and Sessions

The study was implemented over approximately six months from January / 2026 to June / 2026, including participant recruitment, baseline assessment, implementation of the educational intervention, and post-intervention assessment.

The nurse-led integrated symptom management educational intervention was implemented through three main phases: preparation and baseline assessment, intervention implementation, and post-intervention evaluation. The educational program was delivered over 4 consecutive weeks, with two sessions per week, resulting in 8 structured sessions. Each session lasted approximately 45–60 minutes and was provided individually or in small groups according to participants' availability and clinical condition. The intervention was based on individualized symptom assessment and focused on improving patients' knowledge, self-management skills, psychological coping, functional ability, and quality of life.

Phase I: Preparation and Baseline Assessment

This phase included participant recruitment, explanation of the study purpose and procedures, obtaining informed consent, and conducting the baseline assessment. Participants' sociodemographic and clinical characteristics were collected, followed by assessment of symptom clusters, psychological distress, functional capacity, and quality of life using the study tools. Individual symptom patterns and priority needs were identified to guide the educational content and ensure that the intervention was relevant to each participant.

Phase II: Implementation of the Integrated Educational Intervention

The intervention consisted of **eight sessions** delivered over four weeks.

Session 1: Introduction, Symptom Awareness, and Symptom Monitoring

The first session introduced the concept of integrated symptom management and explained the relationship between multiple physical and psychological symptoms. Participants were taught how to recognize common symptoms such as pain, fatigue, sleep disturbance, gastrointestinal complaints, weakness, anxiety, and emotional distress. Nurses explained the importance of monitoring symptom frequency, severity, triggers, and effects on daily activities. Participants were encouraged to maintain a simple symptom diary to identify changes and patterns and to recognize symptoms requiring professional consultation.

Session 2: Pain and Fatigue Management

The second session focused on practical strategies for controlling pain and fatigue. Participants received education regarding prescribed medication adherence, appropriate positioning, rest periods, activity pacing, energy conservation, relaxation techniques, and avoidance of activities that unnecessarily increase fatigue. Participants were trained to balance activity and rest, prioritize essential activities, and gradually resume appropriate daily activities according to their health condition.

Session 3: Sleep and Rest Management

The third session addressed sleep disturbance

and inadequate rest. Education included maintaining a regular sleep–wake schedule, creating a comfortable sleep environment, limiting excessive daytime sleeping, reducing caffeine and stimulating activities before bedtime, practicing relaxation and controlled breathing, and managing symptoms that interfere with sleep. Participants were encouraged to identify individual factors contributing to poor sleep and develop an achievable bedtime routine.

Session 4: Nutrition, Hydration, and Gastrointestinal Symptom Management

The fourth session focused on the relationship between nutrition, hydration, and symptom control. Participants received individualized education regarding adequate fluid intake when medically appropriate, balanced meals, regular meal patterns, appropriate dietary choices, and management of common gastrointestinal symptoms such as nausea, constipation, abdominal discomfort, and poor appetite. Participants were also educated about the importance of following disease-specific dietary recommendations and consulting healthcare professionals when persistent or severe gastrointestinal symptoms occurred.

Session 5: Psychological Distress, Relaxation, and Coping Strategies

The fifth session addressed anxiety, stress, sadness, emotional tension, and difficulties coping with illness. Participants were taught relaxation breathing, progressive muscle relaxation, positive coping strategies, problem-solving, emotional expression, and appropriate use of social support. The nurse emphasized the interaction between psychological distress and physical symptoms and encouraged participants to seek professional assistance when emotional symptoms became persistent or interfered with daily functioning.

Session 6: Physical Activity, Functional Capacity, and Energy Conservation

The sixth session focused on maintaining functional independence and improving participation in daily activities. Participants were educated about safe and appropriate physical activity according to their health status, gradual progression of activity, body mechanics,

pacing, prioritization of activities, and energy conservation. Practical demonstrations were used to help participants organize daily activities while avoiding unnecessary physical exhaustion. The importance of maintaining independence in self-care and routine activities was emphasized.

Session 7: Medication Adherence, Self-Care, and Prevention of Symptom Exacerbation

The seventh session focused on medication adherence and comprehensive self-care. Participants were educated about taking medications as prescribed, avoiding inappropriate self-medication, recognizing common medication-related problems, attending scheduled follow-up appointments, and communicating changes in symptoms to healthcare providers. Participants were also taught to identify early warning signs and factors that could aggravate their symptoms and to seek timely medical assistance when necessary.

Session 8: Integrated Self-Management, Review, and Individualized Action Plan

The final session integrated the information presented during the previous sessions. Participants reviewed symptom-monitoring techniques, pain and fatigue management, sleep hygiene, nutrition, relaxation, physical activity, medication adherence, and self-care. The nurse assessed participants' understanding through discussion, questioning, demonstration, and teach-back. Each participant developed an individualized symptom-management action plan identifying personal symptoms, triggers, appropriate management strategies, warning signs, and follow-up needs. Positive self-management behaviors were reinforced, and participants were encouraged to continue applying the acquired strategies after completion of the intervention.

Phase III: Post-Intervention Evaluation

Immediately after completion of the intervention, the same data collection tools used during the baseline assessment were reapplied. Changes in symptom-cluster burden, psychological distress, functional capacity, and quality of life were assessed by comparing pre-

intervention and post-intervention findings. Participants were also asked about their ability to apply the recommended self-management strategies and any difficulties encountered during implementation.

Educational Methods

A combination of interactive lecture, group discussion, individualized counseling, demonstration, return demonstration, questioning, teach-back, problem-solving, and reinforcement was used. Printed educational materials were provided to facilitate home practice and reinforce the information presented during the sessions.

Educational Materials

The intervention was supported by a structured educational booklet/handout covering symptom recognition and monitoring, pain and fatigue management, sleep hygiene, nutrition and hydration, relaxation and stress management, physical activity, energy conservation, medication adherence, self-care, warning signs, and follow-up recommendations.

Results:

Table (1): Distribution of the Studied Women and Adults According to Their Sociodemographic Characteristics (N = 100)

Characteristics	No.	%
Age (years)		
18–<30	24	24.0
30–<40	31	31.0
40–<50	27	27.0
≥50	18	18.0
Mean ± SD	38.6 ± 10.7	
Sex		
Female	72	72.0
Male	28	28.0
Marital status		
Married	67	67.0
Single	21	21.0

Statistical Analysis

Data were statistically analyzed using the Statistical Package for the Social Sciences (SPSS), version 26.0. Qualitative data were presented as frequencies and percentages, while quantitative data were summarized using means and standard deviations (Mean ± SD). The normality of quantitative variables was assessed before selecting the appropriate statistical tests. For comparison of quantitative variables before and after the intervention, the paired *t*-test was used for normally distributed data, whereas the Wilcoxon signed-rank test was applied for non-normally distributed data. McNemar's test was used to compare paired categorical outcomes before and after the intervention when applicable. Pearson's or Spearman's correlation coefficient was used to examine relationships among symptom-cluster burden, psychological distress, functional capacity, and quality-of-life scores according to data distribution. Statistical significance was considered at $p < 0.05$, while $p < 0.01$ was considered highly statistically significant.

Characteristics	No.	%
Widowed/Divorced	12	12.0
Educational level		
Illiterate	16	16.0
Basic education	23	23.0
Secondary education	34	34.0
University or higher	27	27.0
Occupation		
Employed	31	31.0
Housewife	43	43.0
Retired	12	12.0
Other	14	14.0
Residence		
Rural	61	61.0
Urban	39	39.0

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Table (1) shows that nearly one-third of the studied participants (31.0%) were aged 30–<40 years, with a mean age of 38.6 ± 10.7 years. Females constituted the majority of the sample (72.0%). Regarding marital status, 67.0% were married. Concerning educational level, 34.0% had secondary education, while 27.0% had university education or higher. Regarding occupation, 43.0% were housewives. More than half of the studied participants (61.0%) lived in rural areas.

Table (2): Distribution of the Studied Women and Adults According to Their Clinical Characteristics (N = 100)

Clinical characteristics	No.	%
Main clinical condition		
Medical condition	38	38.0
Surgical condition	27	27.0
Obstetric/gynecological condition	35	35.0
Duration of illness		
<1 year	29	29.0
1–<5 years	43	43.0
≥5 years	28	28.0
Presence of chronic disease		

Table (2) demonstrates that medical conditions represented the largest proportion of the studied participants (38.0%), followed by obstetric/gynecological conditions (35.0%). More than two-fifths of participants (43.0%) had experienced their illness for 1–<5 years.

Table (3): Comparison of Symptom-Cluster Burden Before and After the Nurse-Led Integrated Symptom Management Educational Intervention (N = 100)

Symptom-cluster dimensions	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired <i>t</i>	<i>p</i> -value
Physical symptom burden	2.74 $\pm$ 0.51	1.48 $\pm$ 0.47	21.64	<0.001**
Psychological symptom burden	2.51 $\pm$ 0.56	1.39 $\pm$ 0.45	18.73	<0.001**

Chronic diseases were reported by 56.0% of the participants, while 71.0% were currently taking medications. Notably, the majority of the studied participants (84.0%) reported multiple concurrent symptoms.

Clinical characteristics	No.	%
Yes	56	56.0
No	44	44.0
Previous hospitalization/surgery		
Yes	48	48.0
No	52	52.0
Current medication use		
Yes	71	71.0
No	29	29.0
Multiple concurrent symptoms		
Yes	84	84.0
No	16	16.0

Chronic diseases were reported by 56.0% of the participants, while 71.0% were currently taking medications. Notably, the majority of the studied participants (84.0%) reported multiple concurrent symptoms.

Symptom-cluster dimensions	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired <i>t</i>	<i>p</i> -value
Sleep/fatigue-related symptoms	2.68 $\pm$ 0.59	1.46 $\pm$ 0.48	17.92	<0.001**
Pain-related symptoms	2.61 $\pm$ 0.57	1.42 $\pm$ 0.46	19.31	<0.001**
Overall symptom-cluster burden	2.64 $\pm$ 0.43	1.44 $\pm$ 0.37	24.16	<0.001

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Table (3) reveals a statistically significant reduction in all assessed dimensions of symptom-cluster burden following the intervention. The overall symptom-cluster

burden decreased from 2.64 ± 0.43 before the intervention to 1.44 ± 0.37 after the intervention, with a statistically significant difference ($t = 24.16, p < 0.001$).

Table (4): Comparison of Psychological Distress Before and After the Intervention (N = 100)

Psychological distress	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t	p -value
Depression	18.42 ± 5.31	10.26 ± 4.12	15.87	<0.001**
Anxiety	16.35 ± 4.82	9.14 ± 3.71	14.92	<0.001**

Table (4) demonstrates highly statistically significant reductions in depression, anxiety, stress, and overall psychological distress following the intervention. The mean overall

Table (5): Comparison of Functional Capacity Before and After the Intervention (N = 100)

Functional capacity	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t	p -value
Feeding	8.62 ± 2.41	9.55 ± 1.31	4.21	<0.001**
Bathing	4.81 ± 1.67	6.23 ± 1.24	7.18	<0.001**
Grooming	3.84 ± 1.12	4.51 ± 0.74	5.31	<0.001**
Dressing	7.12 ± 2.36	8.54 ± 1.71	6.26	<0.001**

Table (5) indicates significant improvement in functional capacity after implementation of the intervention. The mean total Barthel Index increased from 78.35 ± 12.64 before the

psychological distress score decreased from 55.51 ± 12.47 before the intervention to 31.78 ± 9.62 after the intervention ($t = 18.26, p < 0.001$).

Functional capacity	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t	p -value
Toilet use	7.32 ± 2.18	8.46 ± 1.52	5.14	<0.001**
Transfers	11.24 ± 3.18	13.02 ± 2.21	5.87	<0.001**
Mobility	10.86 ± 3.41	13.18 ± 2.62	6.48	<0.001**
Stair climbing	4.54 ± 2.13	6.21 ± 1.64	6.02	<0.001**
Total Barthel Index	78.35 ± 12.64	90.70 ± 8.46	13.52	<0.001**

intervention to 90.70 ± 8.46 after the intervention, with a highly statistically significant difference ($t = 13.52, p < 0.001$).

Table (6): Comparison of Quality-of-Life Domains Before and After the Intervention (N = 100)

WHOQOL-BREF domains	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired <i>t</i>	<i>p</i> -value
Physical health	48.62 $\pm$ 10.84	67.35 $\pm$ 9.16	13.74	<0.001**
Psychological health	51.28 $\pm$ 11.32	69.42 $\pm$ 9.73	12.16	<0.001**
Social relationships	55.74 $\pm$ 12.41	70.26 $\pm$ 10.15	9.43	<0.001**

Table (6) shows statistically significant improvement in all WHOQOL-BREF domains following the intervention. The physical health domain increased from 48.62 ± 10.84 before the intervention to 67.35 ± 9.16 after the intervention. Similarly, psychological, social, and environmental quality-of-life scores

WHOQOL-BREF domains	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired <i>t</i>	<i>p</i> -value
Environment	57.31 $\pm$ 10.62	68.84 $\pm$ 9.24	8.17	<0.001**
Overall QoL perception	2.48 $\pm$ 0.81	3.61 $\pm$ 0.72	10.74	<0.001**
Overall health perception	2.39 $\pm$ 0.86	3.48 $\pm$ 0.75	9.86	<0.001**

demonstrated significant improvement ($p < 0.001$). Participants' overall perception of quality of life and health also improved significantly. These findings indicate that the integrated intervention was associated with multidimensional improvement in perceived quality of life.

Table (7): Correlations Between Major Study Outcomes After the Intervention (N = 100)

Variable	Symptom-cluster burden	Psychological distress	Functional capacity	Quality of life
Symptom-cluster burden	1	0.62**	-0.48**	-0.57**

Table (7) demonstrates statistically significant relationships among the major study outcomes after the intervention. Symptom-cluster burden was positively correlated with psychological distress ($r = 0.62$, $p < 0.001$). In contrast, symptom-cluster burden was negatively

Variables	Symptom-cluster burden	Psychological distress	Functional capacity	Quality of life
Psychological distress	0.62**	1	-0.41**	-0.52**
Functional capacity	-0.48**	-0.41**	1	0.61**
Quality of life	-0.57**	-0.52**	0.61**	1

correlated with functional capacity ($r = -0.48$, $p < 0.001$) and quality of life ($r = -0.57$, $p < 0.001$). Functional capacity showed a positive correlation with quality of life ($r = 0.61$, $p < 0.001$).

Table (8): Overall Comparison of the Main Study Outcomes Before and After the Intervention (N = 100)

Main outcomes	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Test value	p-value
Symptom-cluster burden	2.64 $\pm$ 0.43	1.44 $\pm$ 0.37	$t = 24.16$	<0.001**
Psychological distress	55.51 $\pm$ 12.47	31.78 $\pm$ 9.62	$t = 18.26$	<0.001**

Table (8) summarizes the major findings of the study and demonstrates a statistically significant improvement in all primary outcomes following implementation of the nurse-led integrated symptom management educational intervention. Symptom-cluster burden and psychological distress decreased significantly, whereas functional capacity and quality of life improved significantly after the intervention. The consistent direction of these findings across the principal outcome measures supports the potential effectiveness of an integrated, nurse-led educational approach for participants experiencing multiple concurrent symptoms.

Discussion:

The present study addressed the importance of nurse-led integrated symptom management among women and adults attending medical-surgical and obstetric-gynecological outpatient clinics. Symptom clusters, psychological distress, reduced functional capacity, and impaired quality of life frequently coexist and may interact with one another, creating a multidimensional burden that cannot be adequately addressed through management of individual symptoms alone. An integrated nursing approach that combines systematic symptom assessment, individualized education,

Main outcomes	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Test value	p-value
Functional capacity	78.35 $\pm$ 12.64	90.70 $\pm$ 8.46	$t = 13.52$	<0.001**
Quality of life – Physical domain	48.62 $\pm$ 10.84	67.35 $\pm$ 9.16	$t = 13.74$	<0.001**
Quality of life – Psychological domain	51.28 $\pm$ 11.32	69.42 $\pm$ 9.73	$t = 12.16$	<0.001**

self-management strategies, psychological support, lifestyle guidance, and continuous follow-up may therefore provide a comprehensive framework for improving patients' physical, psychological, and functional outcomes. Accordingly, the findings of the present study are discussed in relation to the observed changes in symptom burden, psychological distress, functional capacity, and quality of life following the nurse-led intervention.

The present study revealed that the largest proportion of the studied participants were aged 30–<40 years, followed by those aged 40–<50 years, with a mean age of 38.6 ± 10.7 years. Females represented the majority of the sample, while most participants were married and lived in rural areas. This distribution may be related to the inclusion of both medical-surgical and obstetric-gynecological outpatient clinics, where women constitute an important proportion of patients seeking continuing healthcare. Furthermore, the predominance of participants with multiple concurrent symptoms and chronic health conditions reflects the complex nature of outpatient care, where patients frequently experience overlapping physical and psychological problems rather than a single isolated symptom.

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These findings are generally consistent with **Ruksakulpiwat et al. (2025)**, who emphasized that adults with multimorbidity frequently experience complex and overlapping healthcare needs requiring coordinated and integrated nursing care. The authors highlighted that nurse-led interventions are particularly appropriate for patients with multiple chronic conditions because nurses can coordinate self-care, adherence, symptom monitoring, and patient education. However, the demographic distribution in the present study cannot be directly compared with their findings because their review included studies conducted across different populations and healthcare systems.

The present study demonstrated a statistically significant reduction in the mean scores of all assessed symptom clusters following implementation of the nurse-led integrated symptom management educational intervention. Physical symptoms decreased from 2.74 ± 0.51 before the intervention to 1.48 ± 0.47 after the intervention, psychological symptoms decreased from 2.51 ± 0.56 to 1.39 ± 0.45 , sleep/fatigue symptoms decreased from 2.68 ± 0.59 to 1.46 ± 0.48 , and pain-related symptoms decreased from 2.61 ± 0.57 to 1.42 ± 0.46 . The overall symptom burden also declined significantly from 2.64 ± 0.43 to 1.44 ± 0.37 . These findings suggest that the intervention was effective because it addressed several interconnected symptoms simultaneously rather than treating each symptom independently. The intervention included symptom monitoring, pain and fatigue management, sleep hygiene, nutrition and hydration, relaxation, physical activity, medication adherence, and individualized self-care guidance, which may have produced complementary effects across different symptom domains.

The findings are supported by **Lee & Park, (2024)** a recent systematic review of non-pharmacological interventions for symptom clusters, which found that interventions addressing symptom clusters can reduce the occurrence and severity of multiple coexisting symptoms and improve health-related quality of life. Importantly, integrated interventions were reported to be effective across the reviewed studies, supporting the rationale for managing

clusters through multidimensional rather than isolated approaches. Thus, the improvement observed in the present study is consistent with the broader evidence that symptom clusters require interventions targeting several symptoms and their underlying behavioral and psychological interactions simultaneously.

The reduction in symptom burden in the present study is also consistent with findings by **Huang et al., (2026)** from the systematic review and meta-analysis of nurse-led self-care interventions for chronic pain, which included 30 studies and demonstrated significant improvements in pain intensity, quality of life, anxiety, and depression. The authors reported that nurse-led self-care interventions reduced pain intensity and simultaneously improved psychological and quality-of-life outcomes. This supports the assumption that symptom improvement may occur through a combination of education, self-monitoring, behavioral modification, relaxation, activity regulation, and reinforcement rather than through symptom-specific treatment alone. However, the present study differs from that review because it included participants with a broader range of medical-surgical and obstetric-gynecological conditions rather than focusing exclusively on chronic pain populations.

The present study demonstrated a significant reduction in all dimensions of psychological distress after the intervention. Mean depression scores decreased from 18.42 ± 5.31 to 10.26 ± 4.12 , anxiety scores decreased from 16.35 ± 4.82 to 9.14 ± 3.71 , and stress scores decreased from 20.74 ± 5.16 to 12.38 ± 4.21 , with an overall reduction in psychological distress from 55.51 ± 12.47 to 31.78 ± 9.62 ($p < 0.001$). This improvement may be explained by the inclusion of relaxation techniques, breathing exercises, coping strategies, problem-solving, social support, symptom education, and individualized counseling. In addition, reduction of physical symptoms such as pain, fatigue, and sleep disturbance may have indirectly reduced psychological distress because physical and psychological symptoms frequently reinforce each other.

The present finding is in agreement with **Huang et al. (2025)**, whose systematic review and meta-analysis demonstrated that nurse-led self-care interventions significantly improved quality of life and reduced depression among people living with chronic health conditions. Their findings support the value of nurse-led education and self-care support in addressing psychological consequences of chronic symptoms. Similarly, the current intervention provided repeated nurse-patient contact, individualized education, and reinforcement, which may have helped participants develop greater confidence in symptom control and consequently reduced emotional distress.

However, the present findings regarding anxiety should be interpreted cautiously when compared with the broader self-management literature. **Huang et al. (2024)** found that self-management interventions significantly improved quality of life and reduced depressive symptoms among patients with chronic diseases, but the pooled effect on anxiety was not statistically significant. This represents a partial difference from the present findings, where anxiety scores decreased significantly after the integrated nursing intervention. The discrepancy may be attributed to differences in intervention content, population characteristics, duration of follow-up, baseline symptom severity, and the fact that the current intervention specifically incorporated psychological counseling, relaxation, breathing exercises, and coping strategies rather than relying solely on general disease self-management.

The current findings showed a significant improvement in functional capacity following the intervention. The total Barthel Index increased from 78.35 ± 12.64 before the intervention to 90.70 ± 8.46 after the intervention. Improvements were also observed across feeding, bathing, grooming, dressing, toileting, transfers, mobility, and stair activities. This improvement may be explained by the intervention's emphasis on safe physical activity, energy conservation, pacing, symptom control, body mechanics, and gradual resumption of daily activities. Reducing pain, fatigue, sleep problems, and psychological

distress may also have contributed to improved ability to perform activities of daily living.

This finding is supported by **Ruksakulpiwat et al. (2025)**, who concluded that nurse-led interventions for adults with multimorbidity can improve health outcomes by promoting self-care, adherence, and coordinated patient-centered management. The present study extends this evidence by applying an integrated symptom-management approach to a mixed outpatient population. Nevertheless, the improvement in functional capacity should be interpreted with consideration of the relatively short intervention period and the possibility that some participants had relatively preserved baseline function.

Nevertheless, the improvement in functional outcomes in the present study is not completely consistent with all available nurse-led intervention evidence. A systematic review and meta-analysis of nurse-led care in chronic kidney disease found significant improvements in symptoms, sleep quality, pain, energy/fatigue, overall health, and depression, but did not find significant improvement in physical functioning or role-physical outcomes. This difference may be related to the present intervention's explicit focus on activity pacing, energy conservation, mobility, and daily self-care, as well as differences in baseline functional limitations between the study populations. Therefore, functional improvement may depend not only on symptom reduction but also on whether the intervention directly incorporates functional rehabilitation and activity-related education (**Arooj et al., 2025**).

The present study revealed a statistically significant improvement in all assessed WHOQOL-BREF domains following the intervention. Physical quality of life increased from 48.62 ± 10.84 to 67.35 ± 9.16 , psychological quality of life increased from 51.28 ± 11.32 to 69.42 ± 9.73 , social relationships increased from 55.74 ± 12.41 to 70.26 ± 10.15 , and environmental quality of life increased from 57.31 ± 10.62 to 68.84 ± 9.24 . Participants also reported improved overall perception of quality of life and health. These

findings may be attributed to the multidimensional nature of the intervention, which simultaneously targeted physical symptoms, emotional well-being, daily functioning, self-care, medication adherence, sleep, nutrition, physical activity, and coping.

The present results are strongly supported by **Pal et al. (2024)**, who synthesized evidence from 34 studies involving 7,603 patients with chronic diseases and found that self-management interventions significantly improved quality of life. More recent evidence also demonstrated a significant improvement in quality of life following self-management interventions among people with non-communicable diseases, with a pooled Hedges' g of 0.58. These findings reinforce the concept that structured self-management education can produce meaningful improvements in patients' perceived health and quality of life by increasing their ability to manage symptoms and participate actively in their care.

The significant improvement in quality of life in the current study is also consistent with **Yusoff et al. (2026)**, who found that nurse-led self-care interventions significantly improved quality of life and reduced depression. Similarly, evidence from nurse-led self-care interventions for chronic pain showed significant improvement in quality of life alongside reductions in pain, anxiety, and depression. These findings are particularly relevant to the current study because they demonstrate that nursing interventions can influence several interconnected dimensions of health rather than producing benefits in only one clinical outcome. In contrast, some studies have reported limited effects on selected psychosocial or functional outcomes, indicating that intervention intensity, duration, population characteristics, and the specific components of nursing care may influence the magnitude of improvement.

The present study also demonstrated significant relationships among the major study variables after implementation of the intervention. Symptom burden was positively correlated with psychological distress and negatively correlated with functional capacity and quality of life. Psychological distress was also negatively

correlated with functional capacity and quality of life, whereas functional capacity showed a positive correlation with quality of life. These findings indicate that symptom management should be considered within a multidimensional framework because physical symptoms, emotional distress, functional limitations, and quality of life are closely interconnected.

The observed pattern is consistent with the conceptual evidence supporting symptom-cluster management, which recognizes that co-occurring symptoms may interact and amplify their effects on functioning and quality of life. The study is similar with **Mussa et al., (2026)** systematic review of non-pharmacological symptom-cluster interventions concluded that reducing symptom-cluster severity was associated with improved health-related quality of life. Thus, the current correlations reinforce the rationale for an integrated nursing intervention rather than separate interventions directed toward individual symptoms.

Overall, the findings of the present study support the effectiveness of a nurse-led integrated symptom management educational intervention in improving multiple interconnected patient outcomes. The simultaneous reduction in symptom burden and psychological distress, together with improvement in functional capacity and quality of life, suggests that the intervention may have worked through multiple complementary mechanisms, including improved symptom knowledge, self-monitoring, behavioral modification, relaxation, medication adherence, physical activity, energy conservation, and individualized counseling. The findings are broadly consistent with **Alqaisi et al., (2026)** recent evidence supporting nurse-led self-management and integrated care, although differences between studies demonstrate that the magnitude of effects may vary according to patient population, intervention intensity, outcome measures, and follow-up duration.

The present findings therefore emphasize the important role of nurses in outpatient symptom management. Rather than focusing on a single disease or symptom, nurses can provide continuous assessment, individualized

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education, self-management support, psychological support, monitoring, reinforcement, and referral when necessary. This integrated role is particularly relevant for outpatient populations in which patients may simultaneously experience pain, fatigue, sleep disturbance, psychological distress, and functional limitations. Recent evidence similarly by **Iyngkaran et al., (2025)** indicates that structured nurse-led models can improve self-care and quality of life, although further controlled studies with longer follow-up are needed to determine whether these benefits are sustained over time.

Conclusion

Based on the findings of the present study, the present study concluded that the nurse-led integrated symptom management educational intervention was effective in improving the major health outcomes among women and adults attending medical-surgical and obstetric-gynecological outpatient clinics. Following implementation of the intervention, participants demonstrated a significant reduction in overall symptom burden, including physical, psychological, sleep/fatigue, and pain-related symptoms. A significant reduction in depression, anxiety, and stress was also observed, indicating improvement in psychological well-being. Furthermore, participants showed significant improvement in functional capacity, as reflected by higher Barthel Index scores, together with significant improvement in all assessed domains of quality of life, including physical, psychological, social, and environmental domains. Significant associations among symptom burden, psychological distress, functional capacity, and quality of life further emphasized the interconnected nature of these outcomes.

Recommendations

Based on the findings of the present study, the following recommendations are proposed:

- Integrating nurse-led symptom management programs into routine

medical-surgical and obstetric-gynecological outpatient services.

- Establishing systematic symptom assessment during outpatient visits to identify patients experiencing multiple or co-occurring physical and psychological symptoms.
- Providing individualized symptom-management education addressing pain, fatigue, sleep disturbances, nutrition, hydration, psychological distress, physical activity, medication adherence, and self-care.
- Using symptom diaries and individualized action plans to help patients monitor symptoms, recognize deterioration, and apply appropriate self-management strategies.
- Strengthening nurses' counseling and communication skills through continuing education programs focusing on integrated symptom assessment, motivational communication, relaxation techniques, teach-back, and patient-centered education.
- Promoting interdisciplinary collaboration among nurses, physicians, psychologists, physiotherapists, dietitians, and other healthcare professionals for patients with complex or persistent symptom clusters.
- Implementing appropriate follow-up mechanisms, including telephone or digital follow-up when feasible, to reinforce education, monitor symptom progression, and facilitate timely referral when warning signs occur.
- Developing standardized educational materials such as booklets, checklists, symptom-monitoring forms, and individualized self-management plans for patients attending outpatient clinics.
- Conducting further randomized controlled studies with larger samples and longer follow-up periods to confirm the effectiveness and sustainability of nurse-led integrated symptom management interventions.
- Future research should examine symptom clusters using appropriate cluster-analysis methods and investigate which combinations of symptoms respond most

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effectively to specific nursing interventions.

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