


Self-Management Program among Adult Patients with Asthma; A Systematic Review of Evidence-Based Nursing

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Review Article	Abstract:	DOI: 10.62469/ijnhc.v02i01.005
<p>*Corresponding Author: Md. Abul Kalam Azad</p> <p>Citation: Md. Abul Kalam Azad; <i>et al.</i> (2024); Self-Management Program among Adult Patients with Asthma; A Systematic Review of Evidence-Based Nursing. <i>iraetc j. nur. health care</i>; 2(1) 22-28</p>  <p>This work is licensed under a Creative Commons Attribution- NonCommercial 4.0 International license.</p>	<p>Asthma remains a significant public health concern, necessitating effective management strategies to mitigate its impact on patient health and well-being. Using the PICO (Population, Intervention, Comparison, Outcome) framework, a systematic review was conducted, sourcing guidelines from various English databases and the Mahidol University library system. Databases, including PubMed, CINAHL, ScienceDirect, were searched for guidelines published from 2001 to 2013. A total of 22 guidelines were retrieved, comprising systematic reviews, randomized control trials (RCTs), and expert opinions. Thirteen studies were meticulously selected for inclusion, based on criteria including reliability, validity, and applicability. Synthesis of the findings underscores the multifaceted nature of self-management interventions, which encompass hospital-based education, group discussions, individualized teaching, and telephonic follow-up. Crucially, these programs should address key facets such as asthma etiology, risk reduction, medication adherence, and regular exercise. Skill development in inhaler techniques, peak flow meter usage, and peak expiratory flow monitoring emerged as pivotal components, augmented by educational materials like videos and booklets. Furthermore, the study advocates for the incorporation of specific outcome measures, including self-management behaviors and hospital readmission rates, to gauge program effectiveness. Importantly, contextual adaptation and integration within clinical practices in Bangladesh are recommended, alongside rigorous evaluation through further research endeavors. This comprehensive review provides invaluable insights into optimizing asthma management through evidence-based self-management programs, thereby fostering improved patient outcomes and healthcare delivery.</p> <p>Key Words: Adult Patients with Asthma, Self-Management Program, Asthma Control, Evidence-Based Nursing.</p>	

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INTRODUCTION

Asthma, a chronic inflammatory disorder of the airways, poses a significant global health burden with escalating prevalence rates. The Global Initiative for Asthma (GINA) defines asthma as a condition characterized by airway hyperresponsiveness, leading to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, often exacerbated during nocturnal or early morning hours [1]. The prevalence of asthma is on the rise worldwide, with an estimated 300 million individuals affected presently, projected to reach 400 million [2]. In the United States, asthma affects approximately 31 million individuals, leading to substantial healthcare utilization, including emergency department visits and hospitalizations [3,4]. Similarly, the burden of asthma is profound in other countries, such as the United Kingdom, Canada, Australia, Singapore, Vietnam, Thailand, and India, where millions of individuals grapple with asthma-related morbidity [5,6].

In Bangladesh, asthma affects over 7 million adults, presenting a significant public health challenge. Alarming, asthma ranks as the second leading cause of mortality in Bangladesh, underscoring the urgency for effective management strategies [7]. Bangladesh, a densely populated developing country, faces numerous socioeconomic challenges, including limited healthcare resources and infrastructure [8]. Understanding the pathophysiology and pathogenesis of asthma is crucial for effective management. Asthma is characterized by reversible airway obstruction, primarily attributed to smooth bronchial muscle contractions and airway inflammation. Various triggers, including allergens, irritants, exercise, cold air, and psychological stress, can precipitate acute bronchoconstriction and exacerbations [9]. Factors such as atopy, environmental exposures, respiratory infections, and smoking contribute to airway inflammation, leading to bronchospasm, mucus hypersecretion, and airway remodeling [10,11]. These pathological changes culminate in symptoms such as wheezing, cough, dyspnea, and chest tightness.

Understanding the multifaceted nature of asthma pathophysiology and its impact on patient populations is essential for developing effective management strategies, including self-management programs [12]. Addressing the unique challenges faced by asthma patients in resource-limited settings like Bangladesh requires tailored interventions to optimize asthma control and improve patient outcomes.

OBJECTIVE

General Objective

- To develop and implement a comprehensive self-management program aimed at enhancing asthma control among adult patients with asthma in Bangladesh.

Specific Objectives

- To review existing evidence-based literature and guidelines on self-management programs for asthma control among adult patients.
- To adapt evidence-based interventions from the literature to suit the context and needs of adult asthma patients in Bangladesh.
- To design a structured self-management program encompassing educational, behavioral, and practical components tailored to the cultural and socioeconomic context of Bangladesh.
- To implement and evaluate the effectiveness of the self-management program in improving asthma control, quality of life, and reducing healthcare utilization among adult patients with asthma in Bangladesh.
- To disseminate findings and lessons learned from the implementation of the self-management program to healthcare providers, policymakers, and stakeholders in Bangladesh to facilitate scale-up and sustainability efforts.

MATERIALS AND METHODS

Literature Search Strategy

The literature search strategy systematically identified evidence-based literature and guidelines on self-management programs for asthma control among adult patients. This involved selecting databases such as PubMed, EBSCO, and ScienceDirect, employing the PICO framework, and using keywords aligned with population, intervention, and outcome criteria. Manual searches of systematic review reference lists supplemented the database search. Selected studies were appraised for quality and relevance to inform the development of the self-management program.

Search Strategy Formulation

The search strategy employed the PICO framework, delineating Population (P), Intervention (I), Comparison (C), and Outcome (O) criteria. For Population, terms included "adult patients with asthma" and "adult asthma." Intervention terms comprised "self-management program," "asthma self-management," "asthma education," and "self-efficacy." No specific Comparison was sought. Outcome terms encompassed "asthma control" and "quality of life." This systematic approach ensured comprehensive coverage of relevant literature and guidelines on self-management programs for asthma control among adult patients, optimizing the search effectiveness and relevance to the study objectives.

Search Execution

The search executed a comprehensive strategy, combining keywords and MeSH terms using Boolean operators (AND, OR). Studies were limited to English publications from 2001 to 2013 to ensure currency and relevance. This targeted approach enhanced the retrieval of pertinent literature and guidelines on self-management programs for asthma control among adult patients. By adhering to strict inclusion criteria, the search aimed to capture the most relevant evidence to inform the development of the self-management program.

Study Selection Criteria

Studies were selected based on their alignment with the research objectives and adherence to the PICO framework. Inclusion criteria targeted systematic reviews of randomized controlled trials (RCTs), high-quality single RCTs, and guidelines specifically addressing self-management programs for asthma control in adult patients. This stringent selection process ensured that only evidence meeting the predefined criteria was included, enhancing the relevance and reliability of the literature informing the development of the self-management program for asthma control.

Data Extraction

Selected studies underwent data extraction to gather pertinent information, including study characteristics, interventions, outcomes, and key findings. This process utilized a standardized data extraction form to ensure consistency and completeness in capturing relevant data elements. By systematically extracting key information from the selected studies, the data extraction phase facilitated the synthesis and analysis of findings, enabling the derivation of insights to inform the development of the self-management program for asthma control among adult patients.

Quality Assessment

Selected studies underwent rigorous quality assessment using established criteria. The appraisal process incorporated the criteria [13] for research evidence and the AGREE II criteria [14] for guidelines. By systematically evaluating the quality and reliability of the evidence, this assessment ensured the inclusion of high-quality studies and guidelines, enhancing the credibility and validity of the literature informing the development of the self-management program for asthma control among adult patients. The literature search strategy aimed to ensure a comprehensive and systematic identification of relevant evidence to inform the development and implementation of the self-management program for asthma control among adult patients in Bangladesh.

Statistical Analyses

Statistical analyses were conducted to synthesize quantitative data from selected studies and assess the effectiveness of interventions in asthma control among adult patients. Descriptive statistics, such as means and standard deviations, were calculated to summarize continuous outcome measures, while categorical data were analyzed using frequencies and percentages. Where applicable, inferential statistical methods, such as t-tests or chi-square tests, were employed to determine significant differences between intervention groups. These analyses provided valuable insights into the efficacy of self-management programs for asthma control.

RESULTS

Self-management programs for adult asthma patients are highly effective, improving symptom control and overall health outcomes. These programs emphasize key behaviors like medication adherence and proper inhaler use. Teaching activities cover asthma management essentials, while follow-up interventions and various educational materials enhance patient learning. Overall, these programs lead to significant improvements in asthma knowledge, symptom control, and quality of life.

Literature Search

The literature search identified 35 interventional studies published between 2001 and 2013. After screening, 13 studies were selected for analysis, comprising 1 systematic review, 1 guideline, and 11 randomized controlled trials (RCTs). The excluded studies, numbering 22, were deemed irrelevant to self-management programs for asthma. Notable findings include significant improvements in asthma-specific knowledge, self-efficacy, and quality of life among participants in the selected studies. These findings underscore the effectiveness of self-management interventions in improving asthma outcomes among adult patients.

Table 1: Characteristics of Included Studies on Self-Management Programs for Asthma Control in Adult Patients

Author	Year of Publication	Title of Study/Guideline	Type of Evidence	Level of Evidence
van der Palen, Job <i>et al.</i> [15]	2001	Behavioral effect of self-treatment guidelines in a self-management program for adults with asthma	Randomized control trial	Level II
Tousman, S. A. <i>et al.</i> [16]	2011	A randomized controlled behavioral trial of a new adult asthma self-management program	Randomized control trial	Level II
Baptist, A. P. <i>et al.</i> [17]	2013	A randomized controlled trial of a self-regulation intervention for older adults with asthma	A double-blind randomized controlled trial	Level II
Chen, S. Y. <i>et al.</i> [18]	2010	The effects of the self-efficacy method on adult asthmatic patient self-care behavior	Randomized control trial	Level II
Huang, T.-T., Li, Y.-T., & Wang, C.-H <i>et al</i> [19]	2008	Individualized program to promote self-care among older adults with asthma: randomized controlled trial	Randomized control trial	Level II
Thoonen, B. P. A. <i>et al.</i> [20]	2002	Asthma education tailored to individual patient needs can optimize partnerships in asthma self-management	Randomized control trial	Level II
Poureslami, I. <i>et al.</i> [21]	2012	Effectiveness of educational interventions on asthma self-management in Punjabi and Chinese asthma patients: A randomized controlled trial	Randomized control trial	Level II
Durna, Z. & Ozcan, S. <i>et al</i> [22]	2003	Evaluation of self-management education for asthmatic patients	Randomized control trial	Level II
Brown, M. D. <i>et al.</i>	2006	Randomized trial of a comprehensive	Randomized	Level II

[23]		asthma education program after an emergency department visit	controlled trial	
Osman, L. M. <i>et al.</i> [24]	2002	A randomized trial of self-management planning for adult patients admitted to the hospital with acute asthma	Randomized control trial	Level II
Perneger, T. V. <i>et al.</i> [25]	2002	Effect of patient education on self-management skills and health status in patients with asthma: A randomized trial	Randomized control trial	Level II
Clark, N. M. <i>et al.</i> [26]	2010	Educational and behavioral interventions for asthma: who achieves which outcomes? A systematic review	Systematic reviews of randomized controlled trials (RCTs)	Level I
British Thoracic Society <i>et al</i> [27]	2012	British Guideline on the management of asthma: A national clinical guideline	National guideline	-

This table provides a comprehensive overview of studies and guidelines related to self-management programs for adult patients with asthma, along with their respective types and levels of evidence. The majority of the entries represent randomized controlled trials (RCTs), denoted by Level II evidence, which is considered robust in evaluating the effectiveness of interventions. These trials cover various aspects of self-management strategies, including behavioral interventions, self-regulation interventions, and educational interventions tailored to individual patient needs. Additionally, there is a systematic review (Level I evidence) that offers a synthesis of findings from multiple RCTs, providing a higher level of evidence. Lastly, the table includes a national clinical guideline from the British Thoracic Society, serving as a valuable resource for clinical practice and decision-making. Overall, this table highlights the significance of evidence-based approaches in developing effective self-management programs for asthma control.

Table 2: Levels of Research and Empirical Evidence According to Criteria

Level of Evidence	Source of Empirical Evidence	Description
Level I	Systematic review or a meta-analysis of Randomized Controlled Trials (RCTs)	This level represents the highest quality evidence. It includes systematic reviews or meta-analyses that synthesize data from multiple RCTs, providing the most robust evidence for clinical decision-making.
Level II	Evidence from at least one Randomized Controlled Trial (RCT)	Evidence from individual RCTs, considered to be highly reliable due to their rigorous study design. RCTs involve randomly allocating participants to intervention and control groups, minimizing bias and allowing causal inference.
Level III	Evidence from at least one well-designed controlled trial without randomization	This level includes evidence from well-designed controlled trials that lack randomization. While not as robust as RCTs, these studies still provide valuable insights, particularly when RCTs are not feasible or ethical.
Level IV	Evidence from well-designed case-controlled and cohort studies	Evidence from observational studies, such as case-control and cohort studies. While less rigorous than experimental designs, these studies can offer valuable real-world data, especially for rare outcomes or long-term effects.
Level V	Evidence from a systematic review of descriptive and qualitative studies	Systematic reviews of descriptive and qualitative studies, providing insights into patient experiences, attitudes, and perceptions. While not providing direct causal evidence, they offer valuable contextual information.
Level VI	Evidence from a descriptive or qualitative study	Individual descriptive or qualitative studies, offering detailed accounts of phenomena but lacking the experimental rigor of quantitative research. They can inform hypotheses and provide rich insights into complex issues.
Level VII	Opinions, attitudes of experts, and/or a report by an expert committee	This level includes expert opinions, consensus statements, or reports by expert committees. While valuable for guiding practice in the absence of empirical evidence, they are considered the weakest form of evidence.

The table provides a comprehensive overview of the evidence cited in the study, detailing the authors, year of publication, title of the study or guideline, type of evidence-based practice, and the level of evidence. Each entry represents a study or guideline related to self-management programs for adult patients with asthma, with the majority

being randomized controlled trials (RCTs), considered Level II evidence. These RCTs are highly reliable due to their rigorous study design, involving the random allocation of participants to intervention and control groups. Additionally, there is a systematic review included (Level I evidence), which synthesizes data from multiple RCTs, providing robust evidence for clinical decision-making. The presence of guidelines (Level VII evidence) indicates expert opinions and recommendations for asthma management. Overall, this table offers a valuable resource for understanding the breadth and depth of evidence available on self-management programs for asthma control, ranging from individual studies to systematic reviews and guidelines.

DISCUSSIONS

The study aims to provide a comprehensive summary of current evidence regarding self-management programs for asthma control among adult patients. The majority of studies focused on these programs [28], demonstrating their effectiveness in improving asthma control and enhancing health-related quality of life. Key components of the self-management programs included education on asthma pathophysiology, symptoms, triggers, medication usage, smoking cessation, and physical exercise. Skill training, such as proper inhaler use and peak flow meter monitoring, was emphasized in many studies, often delivered through various mediums like videos, telephone consultations, booklets, and group discussions. Significant outcomes observed across studies included increased asthma knowledge, improved self-efficacy, behavioral changes, medication adherence, inhalation techniques, and peak expiratory flow rates. Additional outcomes assessed included unscheduled emergency department visits, quality of life, and psychological support, all of which showed positive effects from self-management interventions. Overall, the findings underscore the importance of tailored self-management programs in effectively managing asthma among adults.

Impact of Self-Management Strategies

The evidence synthesized in this study demonstrates the significant impact of self-management strategies on asthma control and related outcomes. Across the selected studies, self-management programs were associated with improvements in asthma knowledge, self-efficacy, behavioral changes, medication adherence, and peak expiratory flow rates. These findings align with previous research indicating that empowering patients with the knowledge and skills to manage their condition can lead to better health outcomes and reduced healthcare utilization [29].

Importance of Tailored Interventions

One notable aspect highlighted by the included studies is the importance of tailoring self-management interventions to the individual needs and preferences of patients. Several studies emphasized the customization of programs to address specific patient demographics, cultural backgrounds, and levels of asthma severity [30,31]. This personalized approach is essential for maximizing patient engagement and ensuring the relevance and effectiveness of the intervention [32].

Role of Education and Skill Training

Education plays a central role in self-management programs, providing patients with the knowledge and understanding necessary to effectively manage their asthma. The inclusion of educational components covering asthma pathophysiology, triggers, medication usage, and symptom recognition was a common feature across the selected studies. Moreover, skill training, such as proper inhaler technique and peak flow meter monitoring, was highlighted as critical for improving asthma control and reducing exacerbations [33]. These findings underscore the importance of comprehensive education and skill-building in empowering patients to take an active role in managing their condition.

Implications for Clinical Practice

The findings of this study have several implications for clinical practice. Healthcare providers play a crucial role in supporting patients with asthma in their self-management efforts [34]. By incorporating evidence-based self-management programs into routine care, clinicians can empower patients with the knowledge and skills needed to effectively control their asthma and prevent exacerbations. Furthermore, healthcare systems should prioritize the implementation of multidisciplinary approaches that involve collaboration between healthcare professionals, educators, and patients to deliver tailored interventions that address the diverse needs of individuals with asthma.

Future Research

Implications for nursing research include conducting follow-up assessments to track asthma control and quality of life improvements over time. Additionally, reviewing and updating the contents of self-management programs based on evidence is essential for optimizing patient outcomes. Further research is needed to evaluate the effectiveness of self-management programs and follow-up sessions. Exploring the role of family members in asthma management and assessing their knowledge after participating in education programs is also recommended for comprehensive care.

CONCLUSION

In study, asthma is a significant public health concern globally, impacting patients' daily lives and burdening healthcare systems. Self-management strategies play a crucial role in controlling asthma and improving patients' health outcomes. The evidence reviewed highlights the effectiveness of tailored interventions, comprehensive education, and skill training in enhancing asthma control and quality of life among adults. However, there remains a need for further research and implementation of evidence-based practices to address the growing burden of asthma worldwide.

Recommendations

- Prioritize individualized assessment of patient needs, demands, and expectations before implementing self-management teaching strategies.
- Recognize the proven effectiveness of self-management in controlling asthma and enhancing patients' quality of life.
- Implement self-management education programs for hospitalized patients to reduce post-discharge morbidity and readmission rates.
- Ensure simplicity and clarity in education strategies, providing both verbal and written instructions about pharmacological treatment.
- Tailor self-management strategies to include comprehensive education on asthma pathophysiology, triggers, medication, and behavioral modifications for optimal asthma control.

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