

Assessment of Parents' Knowledge and Confidence in Caring for Children with Asthma: Basis for a Nurse-Led Education Program

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Abstract

This study assessed parents' knowledge and confidence in caring for children with asthma as basis for developing a nurse-led education program. Anchored on Orem's Self-Care Deficit Nursing Theory, Bandura's Social Cognitive Theory, and Leininger's Culture Care Diversity and Universality Theory, the study employed a quantitative descriptive-correlational design. The respondents were 100 parents or primary caregivers of children diagnosed with asthma who were receiving care in the pediatric ward or outpatient department of a selected Level 3 private hospital in Pasig City, Philippines. Data were gathered using a validated structured questionnaire that measured demographic profile, knowledge, and confidence in asthma care. Frequency, percentage, weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient were used to analyze the data. Findings showed that parents had a very high level of knowledge and confidence, with overall means of 3.45 and 3.50, respectively. They were most knowledgeable in recognizing early warning signs and following prescribed asthma management plans, and most confident in asking questions, identifying when emergency care is needed, and actively participating in their child's care. However, gaps remained in differentiating maintenance and rescue medications, applying environmental control and non-pharmacologic strategies, responding to asthma attacks at home, ensuring follow-through of care instructions, and managing anxiety. Age and gender were significantly related to knowledge and confidence, educational attainment showed a weak negative relationship, and socio-economic status showed no significant relationship. The study recommends strengthening nurse-led asthma education through the proposed BREATHE program, focusing on practical home management, medication use, emergency response, and confidence-building. The study supports SDG 3, SDG 4, SDG 10, and SDG 17 by promoting child health, caregiver education, equitable support, and collaboration in asthma care. Its sustainability impact lies in strengthening public health, family-centered nursing practice, and institutional capacity for chronic disease education.

Keywords: Asthma Care, Confidence, Knowledge, Nurse-Led Education Program, Parents, Pediatric Asthma

1. Introduction

This study focuses on the assessment of parents' knowledge and confidence in caring for children with asthma as the basis for developing a nurse-led education program. Asthma remains a major pediatric health concern because it affects children's breathing, school attendance, physical activity, sleep, and overall quality of life. Since most asthma care occurs at home, parents and primary caregivers are central to symptom monitoring, trigger avoidance, medication administration, and emergency response. The study therefore examines how demographic factors such as age, gender, highest level of education, and socio-economic status relate to parents' knowledge and confidence in asthma care. The findings are intended to guide the development of a family-centered, evidence-based nurse-led education program that responds to identified caregiver needs.

Asthma is a chronic inflammatory condition of the airways characterized by recurrent wheezing, coughing, chest tightness, and difficulty in breathing. When poorly managed, it may disrupt children's sleep, limit physical activity, reduce school participation, and negatively affect both children and families. The World Health Organization (2024) reported that asthma continues to affect millions of people globally, with many cases beginning in childhood. In the Philippines, asthma remains one of the common causes of pediatric consultations, emergency visits, and hospital admissions. Environmental and household factors such as air pollution, dust exposure, secondhand smoke, weather changes, and crowded living conditions may worsen symptoms. Since asthma management commonly takes place at home, parents and primary caregivers are expected to monitor symptoms, prevent exposure to triggers, administer medications, and respond appropriately during attacks (Global Initiative for Asthma [GINA], 2025). Parents' ability to care for children with asthma is influenced by their knowledge and confidence. Caregivers who understand the disease process, medications, warning signs, and preventive measures are more likely to provide effective care. Confidence is also essential because it reflects readiness to make decisions and act during breathing difficulty. Studies have shown that better caregiver knowledge and higher confidence

are associated with improved symptom control, better treatment adherence, and fewer emergency visits (Chen et al., 2024; Alzahrani et al., 2023).

The literature presents pediatric asthma as a medical, emotional, social, and economic burden that affects children's school attendance, daily activities, healthcare use, family expenses, and caregiver stress. Asthma remains linked to reduced quality of life and preventable hospitalization among children (World Health Organization, 2024), while uncontrolled asthma is associated with missed school days and limited participation in activities (Patel et al., 2023). Socio-economic disadvantage may worsen asthma outcomes due to limited access to medications, follow-up care, transportation, and healthy living environments (Centers for Disease Control and Prevention [CDC], 2024). Parents also experience anxiety and caregiving stress, especially when they lack confidence in managing symptoms at home (Lee and Kim, 2022). Since children depend on parents for symptom monitoring, trigger avoidance, medication administration, follow-up care, and emergency response, parental knowledge and confidence are essential to effective asthma management (Global Initiative for Asthma [GINA], 2025). Caregivers with better asthma knowledge are more likely to recognize symptoms early, adhere to treatment, and seek timely care (Smith and Lee, 2023; Thompson et al., 2023), while higher confidence is associated with fewer emergency visits and better symptom monitoring (Martinez and Cruz, 2024; Garcia et al., 2022). Proper medication management, including correct inhaler use and distinction between maintenance and rescue medications, is also important in improving adherence and child outcomes (Johnson et al., 2024).

The literature further emphasizes that asthma education should address both caregiver knowledge and emotional readiness. Parental stress and anxiety may weaken confidence and delay proper action during asthma episodes (Brown and Carter, 2023). Nurse-led asthma education is therefore considered an effective intervention because it may include teaching, demonstrations, counseling, written action plans, group sessions, digital support, school coordination, and follow-up reinforcement. Studies show that structured nurse-led education improves parental knowledge, confidence, medication adherence, home management practices, and emergency outcomes (Williams et al., 2024; Johnson et al., 2022; Williams et al., 2026; Anderson et al., 2023; Lopez and Martin, 2024; Roberts et al., 2022; Davis et al., 2023; Hernandez and Cruz, 2024; Thompson et al., 2025). However, barriers such as limited teaching time, staffing shortages, low parental literacy, financial difficulty, language barriers, and weak institutional support may affect implementation (Johnson and Reyes, 2023; Brown et al., 2024; Brown et al., 2025). These findings support the need for a practical nurse-led education program that strengthens parental knowledge, confidence, and home-based asthma care.

Globally, pediatric asthma remains a major chronic health issue that affects child development, schooling, family functioning, and healthcare utilization. The World Health Organization (2024) identifies asthma as a continuing public health concern affecting millions of individuals. In national and local contexts, Filipino children may be exposed to air pollution, household dust, tobacco smoke, overcrowding, and seasonal weather changes, all of which may aggravate asthma symptoms. Many families seek treatment only when symptoms become severe, contributing to preventable emergency admissions. At the family and community level, parents' knowledge and confidence become essential because asthma care is sustained outside hospitals and clinics. Families with lower educational attainment or limited financial resources may encounter greater difficulty understanding medical instructions, purchasing medications, attending follow-up visits, and reducing home-based triggers (American Lung Association, 2024). These realities justify the study's focus on demographic variables and their possible relationship with parental knowledge and confidence.

The study also has national relevance for pediatric nursing practice and policy. Nurse-led education may help reduce emergency visits, improve medication adherence, and support more cost-effective asthma management. It may also provide evidence for integrating structured caregiver education into asthma care guidelines and institutional health programs.

The study is anchored on Orem's Self-Care Deficit Nursing Theory, Bandura's Social Cognitive Theory, and Leininger's Culture Care Diversity and Universality Theory. Orem's theory supports the need for nursing intervention when parents have limited knowledge or skills in managing their child's asthma, particularly in medication administration, symptom monitoring, trigger avoidance, and emergency response (Alligood, 2022). Bandura's theory explains that parental confidence reflects self-efficacy, which may be strengthened through teaching, demonstration, practice, and encouragement from nurses (Bandura, 2023). Leininger's theory emphasizes the importance of culturally appropriate and family-centered education, considering parents' differences in language, beliefs, education, socio-economic background, and health practices (McFarland & Wehbe-Alamah, 2022). Guided by an input-process-output framework, the study examines parents' demographic profile, knowledge, and confidence; follows procedures for instrument validation, ethical approval, data collection, and statistical analysis; and produces a proposed nurse-led education program to improve asthma knowledge, home management confidence, medication administration, trigger prevention, and emergency preparedness (Creswell & Creswell, 2023). The framework also recognizes that social and educational factors may affect family participation in chronic disease management (World Health Organization, 2024), while statistical analysis helps determine the relationship between demographic variables and parental knowledge and confidence (Bernardo & Estrella, 2022).

Although asthma guidelines and health teaching materials are available, gaps in home management remain evident. Some parents may still be uncertain about maintenance and rescue medications, inhaler technique, early warning signs, trigger avoidance, and proper response during attacks. Others may feel anxious or unprepared when symptoms suddenly worsen. These gaps indicate the need for continuous, practical, and family-centered health education. The reviewed literature confirms that parents' knowledge and confidence are essential to safe and effective asthma care, but these may vary according to demographic factors such as age, gender, educational attainment, and socio-economic status. Therefore, assessing these variables is necessary to identify which parent groups may require more focused support. The study is also justified by the need to develop an education program based on actual caregiver needs rather than generalized assumptions. The study seeks to determine the demographic profile of parents, assess their level of knowledge and confidence, examine the significant relationship between demographic variables and these levels, and propose a nurse-led education program based on the findings. The study uses a quantitative descriptive-correlational design through a structured questionnaire to measure levels, describe variables, and determine relationships among identified factors (Polit & Beck, 2022).

This study aligns most directly with SDG 3 – Good Health and Well-Being because it addresses pediatric asthma management, prevention of asthma-related complications, reduction of emergency visits, and improvement of children's quality of life. By strengthening parental knowledge and confidence, the proposed nurse-led education program may support better symptom control, treatment adherence, and safer home-based care. The study also supports SDG 4 – Quality Education because it emphasizes structured health education for parents and caregivers. Nurse-led teaching, demonstrations, counseling, printed materials, and follow-up reinforcement may improve caregiver learning and health literacy. The study relates to SDG 10 – Reduced Inequalities to the extent that it examines demographic factors such as educational attainment and socio-economic status, which may influence access to health information and asthma care resources. Identifying these differences may help tailor education to parents with greater learning or resource-related needs. The study also supports SDG 17 – Partnerships for the Goals because effective asthma management requires collaboration among nurses, parents, healthcare providers, schools, administrators, and policy makers. Coordination among these stakeholders may strengthen continuity of care across home, clinical, and school settings.

The study contributes to public health sustainability by supporting preventive asthma management and reducing the risk of avoidable emergency visits, hospital admissions, and complications among children. Better-informed and more confident parents may respond earlier to warning signs, maintain medication adherence, and prevent worsening symptoms. It contributes to educational sustainability by promoting caregiver health literacy through structured nurse-led education. Since asthma is a chronic condition, families need continuous and practical learning that can be applied in daily home care. It supports socio-economic sustainability by recognizing that asthma imposes financial burdens on families through medications, clinic visits, transportation, and emergency treatment. A responsive education program may help families manage asthma more effectively and reduce preventable healthcare costs. It contributes to institutional sustainability by strengthening the role of nurses as educators, advocates, and partners in chronic disease management. Findings may help hospitals and clinics develop or improve asthma education programs within pediatric services. It also supports policy and governance sustainability by providing evidence for integrating nurse-led caregiver education into pediatric asthma care guidelines and institutional protocols. Such integration may promote family-centered care, better patient outcomes, and more sustainable chronic disease management strategies.

The study focuses on parents or primary caregivers of children diagnosed with asthma who are receiving consultation or treatment in a selected healthcare facility, clinic, or hospital. It assesses parents' demographic profile in terms of age, gender, highest level of education, and socio-economic status; their level of knowledge in caring for children with asthma; and their level of confidence in managing asthma care at home. The findings serve as the basis for developing a proposed nurse-led education program. The study is limited to one selected healthcare setting and uses self-reported responses, which may be affected by memory errors, misunderstanding of questions, or socially acceptable answers. It measures current knowledge and confidence but does not directly evaluate actual caregiving practices, long-term asthma control, frequency of attacks, emergency visits, or hospital admissions. Despite these limitations, the results are expected to provide useful information for designing a practical and responsive nurse-led education program for parents of children with asthma.

2. Material and methods

2.1 Research Design

The study employed a quantitative descriptive-correlational research design. The descriptive approach was used to determine the demographic profile of parents and their level of knowledge and confidence in caring for children with asthma, while the correlational approach examined the relationship between demographic variables and the parents' knowledge and confidence levels. This design was appropriate because it described existing conditions and identified relationships among variables without manipulation or intervention (Creswell & Creswell, 2023; Polit & Beck, 2022; Gray & Grove, 2021).

2.2 Locale of the Study

The study was conducted in a Level 3 private hospital in Pasig City, Philippines, with an authorized bed capacity of 200 beds. The hospital was considered an appropriate setting because it provides specialized healthcare services and regularly attends to pediatric patients, including children with asthma, in its pediatric ward and outpatient department. Level 3 hospitals offer comprehensive and advanced healthcare services, making them suitable for studies involving chronic pediatric conditions (Department of Health Philippines, 2023; World Health Organization, 2024).

2.3 Respondents of the Study

The respondents were 100 parents or primary caregivers of children diagnosed with asthma who were receiving care in the pediatric ward or outpatient department of the selected hospital. They included mothers, fathers, guardians, or adult family members directly responsible for the child's asthma care at home. These respondents were appropriate because they perform essential caregiving tasks such as symptom monitoring, medication administration, trigger avoidance, and decision-making during asthma attacks (Global Initiative for Asthma [GINA], 2025).

2.4 Sample and Sampling Procedure

The study used simple random sampling to give all qualified parents or caregivers an equal chance of being selected and to reduce selection bias (Polit & Beck, 2022). Eligible participants were identified in coordination with the pediatric ward and outpatient department. The respondents were selected using an objective randomization method. Included in the study were parents or caregivers of children with confirmed asthma diagnosis, those directly involved in daily asthma management, and those willing to participate. Those unable to understand the questionnaire, emotionally distressed, seriously ill, newly exposed to asthma care, or unwilling to participate were excluded.

2.5 Research Instrument

A structured questionnaire was used to gather data on the respondents' demographic profile, knowledge, and confidence in caring for children with asthma. The first part covered age, gender, highest level of education, and socioeconomic status. The second part assessed knowledge and confidence related to asthma triggers, warning signs, medication use, inhaler technique, prevention, and emergency response. The questionnaire used a 4-point Likert scale, which is commonly applied in health research to measure attitudes, confidence, and perceived knowledge (Polit & Beck, 2022; Joshi et al., 2020). The instrument was validated by experts in nursing research, pediatric care, or asthma management and was pilot-tested to ensure clarity, consistency, and reliability.

2.6 Data Gathering Procedure

Before data collection, the researcher secured ethics approval and permission from the selected hospital. Coordination was made with the pediatric ward and outpatient department to identify qualified respondents. The selected participants were informed about the purpose, procedures, voluntary nature of participation, confidentiality of responses, and their right to withdraw at any time. After obtaining informed consent, the questionnaires were personally distributed and answered at a convenient time. Completed questionnaires were checked for completeness, coded, and stored securely. No personal identifiers were required to protect the privacy of the respondents.

2.7 Data Analysis Techniques

The collected data were analyzed using appropriate statistical tools. Frequency and percentage were used to describe the respondents' demographic profile. Weighted mean and standard deviation were used to determine the parents' level of knowledge and confidence in caring for children with asthma. Pearson Product-Moment Correlation Coefficient, or Pearson r , was used to determine the significant relationship between demographic profile and parents' knowledge and confidence levels (Triola, 2022). The 0.05 level of significance was used in accepting or rejecting the null hypotheses (Creswell & Creswell, 2023).

2.8 Ethical Considerations

The study followed ethical principles to protect the rights, dignity, and safety of the respondents. Approval was secured from the appropriate ethics review committee and the hospital administration before data gathering (World Medical Association, 2022). Informed consent was obtained from all participants, and participation was voluntary. Confidentiality and anonymity were maintained by using codes instead of names. The data were used only for academic and research purposes. The researcher also ensured that participation caused minimal inconvenience and that all qualified respondents were given fair opportunity to participate.

3. Results and Discussion

3.1 Main Findings

3.1.1 Demographic Profile of the Parents

The respondents were 100 parents or caregivers of children with asthma. Most were aged 30–39 years and 40–49 years, with each group representing 40.0% of the respondents, while 20.0% were 50 years old and above. There was an almost equal gender distribution, with 51.0% female and 49.0% male respondents. In terms of education, 51.0% reached college level and 49.0% completed high school. Most respondents belonged to the middle-income group at 77.0%, followed by low-income at 20.0% and high-income at 3.0%. These findings suggest that the respondents were mostly mature adults actively involved in child-rearing and health-related decision-making. Their nearly balanced gender distribution also indicates shared participation of mothers and fathers in asthma care. Educational and socio-economic differences may affect health literacy, access to treatment, and ability to sustain asthma management practices (World Health Organization, 2024; Global Initiative for Asthma, 2025; Nutbeam & Lloyd, 2022; Centers for Disease Control and Prevention, 2024).

3.1.2 Level of Knowledge in Caring for Children with Asthma

The parents demonstrated a very high level of knowledge, with an overall mean of 3.45. They showed strongest knowledge in recognizing early warning signs of worsening asthma and understanding the importance of following prescribed asthma management plans. However, relatively lower scores were noted in differentiating maintenance and rescue medications, applying environmental control measures, using non-medication strategies, and fully understanding health teaching. The results indicate that parents generally understand essential asthma care practices, especially symptom recognition and treatment adherence. However, the lower-scoring areas show the need for reinforcement in medication differentiation, trigger reduction, and supportive home management. Informed caregivers are more likely to follow treatment plans, recognize worsening symptoms early, and seek timely care (Global Initiative for Asthma [GINA], 2025). Early recognition of asthma warning signs helps reduce severe attacks and emergency hospitalization (World Health Organization, 2024), while adherence to maintenance therapy remains important for long-term asthma control (GINA, 2025). Nurse-led education may further improve caregiver competence, confidence, and adherence (Johnson et al., 2024).

3.1.3 Level of Confidence in Caring for Children with Asthma

The parents also demonstrated a very high level of confidence, with an overall mean of 3.50. They were most confident in asking questions about asthma care, knowing when to seek emergency care, and taking an active role in managing their child's condition. Lower scores were observed in responding to asthma attacks at home, consistently following care instructions, and managing anxiety during asthma episodes. These findings show that parents feel capable of participating in asthma care, especially in communication and emergency decision-making. However, some still need support in home-based emergency response, anxiety management, and consistent application of care instructions. Confidence is important because parents are responsible for daily monitoring, medication administration, and early response during asthma symptoms (Global Initiative for Asthma [GINA], 2025). Parents with higher confidence are more likely to follow asthma action plans, monitor symptoms, and maintain follow-up care (World Health Organization, 2024). Caregiver stress and anxiety may affect treatment confidence, making supportive education necessary (Johnson et al., 2024). Repeated nurse-led follow-up teaching also improves adherence and confidence over time (GINA, 2025).

3.1.4 Relationship Between Demographic Profile, Knowledge, and Confidence

The findings showed that age had a significant positive relationship with both knowledge and confidence. Gender also had a significant relationship with both variables. Educational level had a weak but significant negative relationship with knowledge and confidence, while socio-economic status showed no significant relationship. This means that older parents tended to demonstrate higher knowledge and confidence, while income level did not appear to determine asthma-related competence. These results suggest that maturity, caregiving experience, and actual involvement in asthma care may influence parents' knowledge and confidence more than income or formal education alone. Female caregivers showed higher knowledge and confidence, which may be linked to more frequent involvement in daily child care and communication with healthcare providers (Friedman et al., 2020; Stone et al., 2022). The weak negative relationship with education indicates that higher education does not automatically ensure better asthma-specific understanding, which is consistent with findings that educational level and asthma outcomes may relate in complex ways (Saijo et al., 2021). Socio-economic status also did not consistently reflect caregiving behavior or management effectiveness (Osvald et al., 2022). Structured asthma education remains important because it can improve parental self-efficacy and knowledge regardless of demographic background (Mendes et al., 2024).

3.2 Basis for the Proposed Nurse-Led Education Program

Based on the results, the proposed program was entitled BREATHE, or "Building Responsive Education and Asthma Training for Home Empowerment." The program focused on the lowest-scoring areas in knowledge and confidence, particularly medication differentiation, environmental control, assessment of parental understanding, home response during asthma attacks, follow-through of care instructions, and anxiety management. The program was designed for parents of

children with asthma and included five sessions covering childhood asthma and prevention, medication administration, monitoring and emergency management, confidence-building, and assessment of learning. The proposed program is justified because the findings showed that parents already have strong knowledge and confidence but still need practical reinforcement in specific areas of asthma care. Asthma education is considered a core component of effective asthma management because it strengthens caregiver understanding of trigger control, medication use, symptom monitoring, and emergency response according to the Global Initiative for Asthma (GINA 2024). Structured nurse-led education also improves parents' knowledge, confidence, and adherence to asthma treatment plans Johnsons et al (2021). Therefore, the proposed program may help sustain parental strengths while addressing remaining gaps in safe and effective home-based asthma management.

4. Conclusion & Recommendations

The study concluded that parents of children with asthma demonstrated very high levels of knowledge and confidence, with overall means of 3.45 and 3.50, respectively. Parents were particularly knowledgeable in recognizing early warning signs and following prescribed asthma management plans, and they were confident in asking questions, identifying when emergency care is needed, and participating actively in their child's care. However, gaps remained in differentiating maintenance and rescue medications, applying environmental control and non-pharmacologic strategies, responding to asthma attacks at home, ensuring follow-through of care instructions, and managing parental anxiety. Age and gender were significantly related to knowledge and confidence, educational attainment showed a weak negative relationship, and socio-economic status showed no significant relationship. These findings affirm the need for a structured nurse-led education program that reinforces practical asthma management, strengthens parental confidence, and supports better asthma control outcomes (World Health Organization, 2024; Global Initiative for Asthma [GINA], 2025; Johnson et al., 2024).

Based on the findings, the study recommends strengthening nurse-led asthma education by focusing on home asthma attack response, proper distinction between rescue and maintenance medications, trigger prevention, symptom monitoring, and emergency steps. Nurses should provide individualized teaching based on parents' age, needs, and caregiving experience, involve both mothers and fathers in care planning, and reinforce teaching during clinic visits, hospital admissions, discharge, and follow-up care. Nursing education may include simulations, case studies, counseling practice, and school-based asthma modules, while children should gradually be taught to recognize symptoms, avoid triggers, and inform adults during breathing difficulty. Parents and caregivers are encouraged to attend asthma education sessions, maintain follow-up consultations, monitor symptoms at home, and reduce exposure to smoke, dust, and allergens. Nursing organizations, school administrators, and future researchers should also support continuing education, school coordination, staff training, and further studies on psychosocial, environmental, and program effectiveness factors.

The study was limited to parents or primary caregivers of children diagnosed with asthma who were receiving consultation or treatment in one selected healthcare setting; therefore, the findings may not fully represent parents from other hospitals, communities, or regions. The study also relied on self-reported responses, which may have been influenced by memory errors, misunderstanding of questions, or socially acceptable answers. It measured only the current level of parental knowledge and confidence and did not directly evaluate actual caregiving practices, long-term asthma control, frequency of attacks, emergency visits, or hospital admissions. Other factors such as previous asthma education, duration and severity of the child's illness, family support, and access to healthcare services were not fully controlled, although the results remain useful in developing a practical nurse-led education program for parents and caregivers (Creswell & Creswell, 2023; Global Initiative for Asthma [GINA], 2025; Polit & Beck, 2022).

Compliance with ethical standards

The study complied with institutional ethical standards in the conduct of research involving parent respondents of children with asthma. Ethical approval and permission from the concerned institution were secured prior to data collection. Participation was voluntary, and informed consent was obtained from all respondents after the purpose, procedures, and scope of the study were explained. Confidentiality and anonymity were maintained by using coded responses and excluding personal identifiers from the questionnaires. All gathered data were used solely for academic and research purposes. The authors declare no conflict of interest and acknowledge the contribution of the respondents, healthcare personnel, and institution that supported the completion of the study. Copyright ownership and authorship responsibility remain with the authors, who affirm that the work was conducted with honesty, transparency, and respect for research integrity.

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