# A Model of Factors Influencing Asthma Control among Preschool Children as Perceived by Family Caregivers

*Le Thi Thanh Tuyen,* Rutja Phuphaibul, Sermsri Santati, Natkamol Chansatitporn*

**Abstract:** Asthma is the most common non-communicable disease among children and the prevalence of childhood asthma is increasing in Vietnam. Often, due to the stage of development of the child and the illness, control of asthma in pre-school age children depends on family caregivers. To design effective interventions for asthma control, understanding family caregivers' perceptions of factors that influence such control is necessary. Thus, this cross-sectional study developed and tested a model of how perceived social support, satisfaction with nursing care, access to healthcare and family management work to explain asthma control among pre-school age children. A convenience sample of 328 primary family caregivers of pre-school age children with asthma from three public hospitals in Da Nang, Vietnam was recruited. Questionnaires used were a demographic form, and Vietnamese versions of the Best Asthma Control Test for Preschoolers, the Modified Social Support Questionnaire, the Access to Healthcare Instrument, and the Patient Satisfaction with Nursing Care Quality Questionnaire. The SPSS version 18 and the AMOS program were used to test the model.

Findings revealed that the hypothesized model fitted with the data and explained 38% of the variance in asthma control. Contextual factors had a direct effect on asthma control and an indirect through family management. Family management had a significant direct positive effect on asthma control. Among these factors, perceived social support had the strongest total effect whereas access to health care had the strongest direct effect on asthma control. Nurses can use this finding to strengthening support from significant people to improve family management and strengthen access to health care using various strategies such as telehealth to support asthma control.

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## Background and Significance

Asthma is the most common chronic respiratory disease among children. Most children are diagnosed with asthma at five years of age and up to nearly 50% of children have asthma symptoms at two years of

age.[1] The prevalence of childhood asthma in Vietnam is increasing, especially in the two big cities of Ha Noi and Ho Chi Minh.[2] In Vietnam, there is increased industrialization and cities are polluted due to many factories being built and many of the population use motorbikes for transport. Additionally, in rural areas, there is an increased use of biomass fuel and farmers burn straw after cropping, and disturbingly, Vietnam is in the top 15 countries in the world for the consumption of cigarettes.[3] All of these are allergens that could trigger an asthma attack. Childhood asthma is a frequent cause of school absenteeism, hospitalization, emergency room visits and more use of healthcare resources and is a burden to the national economy. In addition, uncontrolled asthma leads to a lower quality of life and a burden for the family, parents and children. Therefore, asthma control is an important goal of asthma treatment and management.[4,5]

Among children of preschool age, family caregivers play significant roles in disease control due to their age and illness. The caregivers are responsible for managing medication use, avoiding and reducing asthma triggers, controlling symptoms and detecting early signs of an asthma attack.[6] Additionally, information from family members and carers help to define symptom control.[7] Numerous studies have conducted to examine asthma control, however, this issue is not understood well from the perspectives of family caregivers of preschool children, especially in Vietnam.

Some factors found that independently impact asthma control by family caregivers include family management, perceived social support, satisfaction with nursing care and access to healthcare.[8-11] The study applied the Family Management Style Framework (FMSF) which is a well-established framework for researchers investigating family responses to childhood chronic conditions.[12] Researchers have rarely examined how these variables work to explain their effects on asthma control, which is very important in developing effective interventions to help the family to better control asthma among this group of children. Therefore, this study sought to develop and test a causal model of how family management and its contextual factors (perceived social support, satisfaction with nursing care, and access to healthcare) work to explain asthma control among preschool children with asthma as perceived by family caregivers in the context of Vietnam.

## Review of Literature and Conceptual Framework

This study used the Family Management Style Framework (FMSF) which is developed by Knafl and colleagues and literature to guide the study.[16] This framework aims to describe "a conceptual representation of family response" to a child's chronic condition that "incorporates the views of individual family members to conceptualize overall patterns of family response".[12;13,p.412] The FMSF is widely used in many nursing studies, such as asthma[14], congenital adrenal hyperplasia[15], and autism spectrum disorder.[16] In the framework, *contextual influences* are factors outside the immediate family that contribute to the easiness or difficulty of family management, while *family management* is one of the key aspects of the FMSF that provides a comprehensive understanding of family responses to having a child with a chronic condition.[12] The outcomes are measured as individual functioning and/or family unit functioning.[12] When adopting the FMSF into the context of asthma control among family caregivers for preschool children, several studies have reported that caregivers' perceived social support, satisfaction with nursing care and access to healthcare are positively predictive of family management as well as asthma control.[9,10]

Studies have found social support is a predictive factor of asthma control., for example, Scheckner et al.[10] Social support is the perception or experience of recipients about receiving supportive actions and behaviors in

"fostering emotional, instrumental, informational, appraisal, and companionship needs"[17, p.174] from close relations or significant others that matches the type of support sought by recipients in dealing with life crisis and improving well-being.[17] This factor could help caregivers' increased confidence in managing their children's emotions, assessing their health condition and addressing problems. Additionally, problem-solving skills, ability to care, and maintaining health care behaviors were also much improved.[18]

Satisfaction with nursing care is rated by patients and/or caregivers within the context of quality of nursing care as well as that of healthcare services, and interchanges between patients, caregivers and health professionals in which the nurse plays a key connection. Satisfaction with nursing care is an important factor for better outcomes due to improving attitudes toward healthcare providers and enhancing coordinating of care.[19] Previous studies indicate that a greater level of satisfaction with healthcare providers is associated with better regimen adherence,[20] whereas parental satisfaction has been negatively related to visiting a pediatric asthma physician.[9]

Access to healthcare is a vibrant area of research today. Generally, this variable refers to geographic accessibility, availability, approachability, financial accessibility, acceptability, affordability and accommodation.[21] Access to healthcare is a factor of the context dimension affecting the proximal outcome of an individual as better health status.[22] Participants in one study stated that cost influenced their ability to take prescribed medications, consequently, they struggled with their asthma control.[23] Contrastingly, a study among family members of children with asthma aged from 5 to 12 reported that Medicaid insurance was an independent factor that predicted poorly controlled asthma.[24] In Vietnam, healthcare for children is one of the priorities of the government. From birth to six years children are provided with health insurance by the government. They can be treated free at public hospitals and most medications are also paid for by the insurance. For example, salbutamol is a common medicine used to control asthma and is on the list of insurance coverage. Hence, family caregivers have fewer problems related to healthcare cost. Besides cost, a qualitative study also found that lack of access to appropriate, timely care and poor communication with healthcare staff also negatively impacted their asthma management and control.[23]

Family management is the key to balance family life in a crisis and is central to caring for children with a chronic condition at home. To manage childhood asthma well, parents are required to understand asthma and its treatment, learn to monitor symptoms, handle exacerbations and integrate caring into normal family life as well as manage the developmental capacity of children.[6] Many studies have revealed the positive effect of family management on asthma control among children with asthma.[8,25]

Control is the optimal goal of asthma and consists of two domains, symptom control over the previous four weeks and future risk control which are recommended to be assessed in parallel.[7] Specific for preschool asthmatics, the Japanese Pediatric Asthma Guideline suggested a four-level assessment of asthma control, including well-controlled, partially controlled, poorly controlled and very poorly controlled asthma.[26] Among children, asthma control should be based on self-report as perceived by their parents or primary caregivers for reliable information.

From the FMSF and literature, a Causal Model of Asthma Control was developed. As shown in **Figure 1**, perceived social support, satisfaction with nursing care, access to health care, positively affect asthma control both directly and indirectly through family management. It was hypothesized that this model would fit with the empirical data.

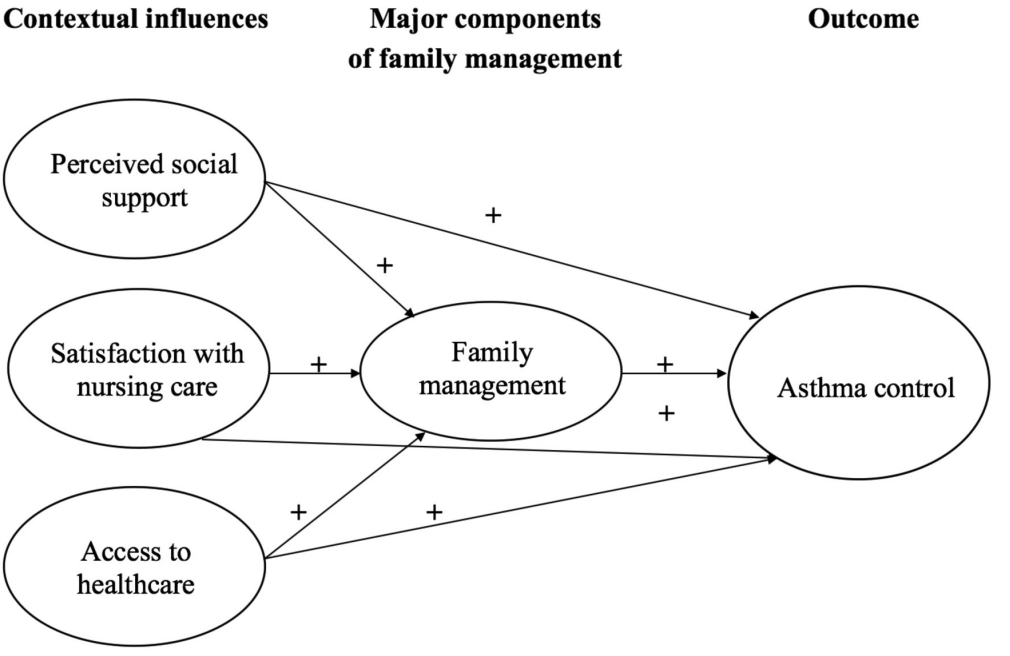



**Figure 1.** The Hypothesized Model of Asthma Control Among Preschool Children with Asthma

## Methods

**Study design:** A cross-sectional design

**Setting and sample:** The study was conducted at the outpatient departments, respiratory departments/rooms of three public hospitals in Da Nang city, Vietnam. The participants were primary family caregivers who met the following inclusion criteria: aged >18 years, had experience in caring for the asthmatic child at least 3 months continuously; and able to communicate, read and write in the Vietnamese language. The criteria for the children they were caring for were between 3-6 years old and diagnosed with asthma by a physician at least 3 months ago. Caregivers were excluded if they had any serious health problem (such as mental health issues or cancer) or children had any other chronic conditions or mental disabilities.

The sample size calculation was based on 10 observations per estimated parameter with 10% for missing data added.[27] Therefore, the calculation was 286 participants. However, during data collection, the number of participants enrolled in the study was higher than estimated so this was more favourable for the generalization of findings. Finally, 328 participants were recruited by a convenience sampling technique.[27]

**Ethical considerations:** The study was approved by the Institutional Review Board, Faculty of Medicine Ramathibodi Hospital, Mahidol University (COA. MURA2019/1059). Consent forms were provided to participants for signatures, and the researcher distributed their questionnaires. Participants were assured that they had the right to refuse or withdraw from the study at any time. Anonymity and confidentiality were preserved at all times.

**Instrumentation:** Six instruments were used, five of which were translated into Vietnamese, and are discussed below. The process of back-translation of these, except for the demographic questionnaire, was performed under the guidelines of Sousa and Rojjanasrirat.[28] The content validity of all translated instruments in Vietnamese were reviewed by six experts,

knowledgeable in pediatrics and healthcare. Pilot testing was performed with 30 participants who were not included in the main study. Results of the CVI, reliability in the pilot and main study and examples of items are shown in **Table 1**.

**Table 1** Content validity index and Cronbach's alpha reliability of instruments

| Instruments | Range of I-CVI | S-CVI | | Cronbach's alpha | | Example of item |
|---|---|---|---|---|---|---|
| | | S-CVI/Ave | S-CVI/UA | Pilot study | Actual study | |
| **B-ACT-P-V** | 1.00 | 1.00 | 1.00 | 0.84 | 0.80 | How often did your child have wheezing and/or whistling during a common cold in the last 4 weeks? |
| **FAMM-V** | 0.83 – 1.00 | 0.99 | 0.92 | 0.80 | 0.80 | |
| Child's daily life | – | – | – | 0.81 | 0.81 | Our child's everyday life is similar to that of other children his/her age. |
| Condition management ability | – | – | – | 0.86 | 0.82 | We have enough money to manage our child's condition. |
| Condition management effort | – | – | – | 0.81 | 0.79 | It takes a lot of organization to manage our child's condition. |
| Family life difficulty | | | | 0.86 | 0.80 | It is very hard for us to take care of our child's condition. |
| Parental mutuality | – | – | – | 0.80 | 0.83 | We are a closer family because of how we deal with our child's condition. |
| View of condition impact | – | – | – | 0.81 | 0.80 | Because of the condition, we worry about our child's future. |
| **MPSS-V** | 1.00 | 1.00 | 1.00 | 0.96 | 0.9 | |
| Family | – | – | – | 0.83 | – | How much confidence did you have that support from your spouse, father, mother and children be offered to you? |
| Sibling and Relatives | – | – | – | 0.93 | – | How much concern did you receive from your siblings and relatives during the childcare? |
| Friends and Colleagues | – | – | – | 0.95 | – | During childcare, how much comfort and encouragement did your friends and colleagues offer you? |
| Neighbors | – | – | – | 0.96 | – | How much information, guidance, and advice on useful guidelines did you received from your community members during childcare? |
| **PSNCQQ-V** | 0.83 – 1.00 | 0.98 | 0.90 | 0.98 | 0.91 | How clear and complete the nurses' explanations were about tests, treatments, and what to expect. |
| **AHC-V** | 0.83 – 1.00 | 0.97 | 0.84 | 0.87 | 0.88 | How often has the availability of health care services and medical care been a problem for you? |

*The Demographic Questionnaire* comprised two parts. Firstly, personal information of the caregiver, including age, gender, relationship with the child, marital status, education, number of children cared for, family income and affordable expense (perceived as enough money for expenses). Part two contained information about the child, age, gender, asthma duration, asthma severity as diagnosed by the physician, number of asthma attacks and number of hospitalizations during the last three months.

*The Best Asthma Control Test for Preschoolers-Vietnamese version (B-ACT-P-V)* was originally developed by Sato et al. based on a Japanese pediatric asthma guideline.[26] This instrument has six questions focused on the frequency and severity of symptoms. The disruption of family life caused by asthma in the past 4 weeks and hospitalization in the past 12 months. Each item is rated by a 4-point Likert scale, with 4 = none and 0 = daily. The total score of the instrument is the sum of scores of all items and was classified into four groups, consisting of: <18 = very poorly controlled, 19-20 = poorly controlled, 21-22 = partially controlled and >23 = well controlled. The B-ACT-P-V achieved a good internal consistency with Cronbach's alpha of 0.796.[26]

*The Family Management Measurement-Vietnamese version (FaMM-V)* was developed by Knafl et al. based on the FMSF.[29] It is a 53-item self-report of parent or caregiver family management using a 5-point Likert scale, with 1 = strongly disagree and 5 = strongly agree. The scoring range is 53-265 with a higher score indicating better family management. This instrument is divided into six subscales with the scoring range being: child's daily life scale (5 items, range of score 5-25), condition management ability scale (12 items, range 12-60), condition management effort scale (4 items, range 4-20), family life difficulty scale (14 items, range 14-70), view of condition impact scale (10 items, range 10-50), and parental mutuality scale (8 items, range score 8-40).[29]

The FaMM-V had acceptable internal consistency reliabilities for subscales, ranging 0.72 to 0.91. Test-retest reliabilities ranked 0.71 to 0.94. CV testing showed an acceptable result of the six separate subscales.[29]

*The Modified Social Support Questionnaire-Vietnamese version* (MSSQ-V) was originally developed in Thai by Hanucharurnkul in 1988, then it was modified by Pipatananond in 2001 and the latest version was adapted by Santati in 2005.[30] It consists of 28 items to measure the type of support (information, emotion and tangibility) that caregivers receive such as sources of support from family members, sibling and relatives, friends, co-workers, neighbors and other people in the community. It uses a 5-point Likert scale, ranging from 0 (not at all) to 4 (a great deal). The total scores of the instrument are summed and the range is between 0 to 112. A higher score of the MSSQ-V indicates a higher level of perceived social support. The MSSQ-V achieved a high reliability value with the Cronbach's alpha coefficient being 0.95.[30]

*The Patient Satisfaction with Nursing Care Quality Questionnaire-Vietnamese Version* (PSNCQQ-V) was derived from the Patient Judgement of Hospital Quality questionnaire which was developed by the Hospital Corporation of America.[31] The instrument aims to measure perspectives with content that represents salient features to patients. Additionally, there are three questions designed to measure the overall satisfaction of patients about the quality of hospital and quality of care and intention to recommend. The PSNCQQ-V has 22 items with a 5-point Likert scale, ranked from 1 (poor) to 5 (excellent). The total score of the instrument is the average of summed scores of all items, which range from 1 to 5. A higher score indicates higher satisfaction with nursing care. The Cronbach's alpha coefficient of the PSNCQQ-V achieved an excellent 0.97. Total item correlation was high (0.61-0.89).[31]

*The Access to Healthcare Instrument-Vietnamese version* (AHC-V) was originally developed by Zandam et al. to measure access to healthcare.[21] The instrument has 25 items divided into six sub-scales including approachability, availability, accessibility, affordability, acceptability and accommodation. Participants rated

on the 5-point Likert scale from 0 means the most negative response and 4 means the most positive response. The index instrument score was the sum of the score of all 25 items on the scale which ranges from 0 to 100. A higher score indicates a higher level of access to healthcare. Reliability testing of the AHC-V showed a Cronbach's alpha range of 0.679 to 0.799, with overall satisfactory internal consistency.[21]

**Data collection:** This was performed by the primary investigator (PI) and two research assistants (RAs) who were registered nurses and also nursing lecturers at the Faculty of Nursing, Da Nang University of Medical Technology and Pharmacy. Advertisements about the study were placed in hospital reception areas, and interested caregivers joined the study after they were contacted by the PI who assessed that they met the inclusion criteria. Information and consent forms were given to all potential participants and questions were answered by the PI or RAs. After that, those who agreed to join the study were asked to sign the informed consent before questionnaires were distributed to them. Data was collected at a time and place appropriate to participants who filled in the questionnaires by themselves. Data collection was undertaken over five months from November 2019-March 2020.

**Data analysis:** SPSS version 18 was used to analyse descriptive statistics (frequency, percentage, range, mean, and standard deviation) for demographics, and study variables (asthma control, family management, perceived social support, satisfaction with nursing care, and access to healthcare) and test assumptions before running structural equation model (SEM) and there was no violation. The AMOS statistical package was used to test the causal relationships of the model. The SEM was assessed using multiple goodness-of-fit indices: goodness of fit index (GFI), adjusted goodness of fit index (AGFI), root mean square error of approximation (RMSEA), comparative fit index (CFI) and chi-square value. The level of significance was set at 0.05.

## Results

**Demographic characteristics of family caregivers**

The participants were 328 family caregivers of preschool children with asthma with a mean age of 34.4 years. Female participants were in the majority, more than triple (76.50%) the number of males (23.50%), and most were mothers (74.70%). The majority were married (93%) and over a third had completed undergraduate college (36.90%) and a high school degree (34.10%). The average family monthly income was VND 13,860,000 (around USD 630) and caregivers described their income as sufficient to meet their basic needs. In families, the number of children ranged from 1 to 3 (mean = 1.48).

**Characteristics of children with asthma**

They ranged in age from 3-6 years with a mean age of 4.31 (SD = 1.22). Males comprised over 60% of the sample, almost twice the number of females. On average, children had been diagnosed with asthma for one year (50.6%), followed by six months and under six months (26.8%), with most having a moderate level of severity. On average, during the three months preceding data collection, children had experienced about two asthma attacks (SD = 1.88) and had been admitted to the hospitals an average of 1.45 times.

**Descriptive characteristics of study variables**

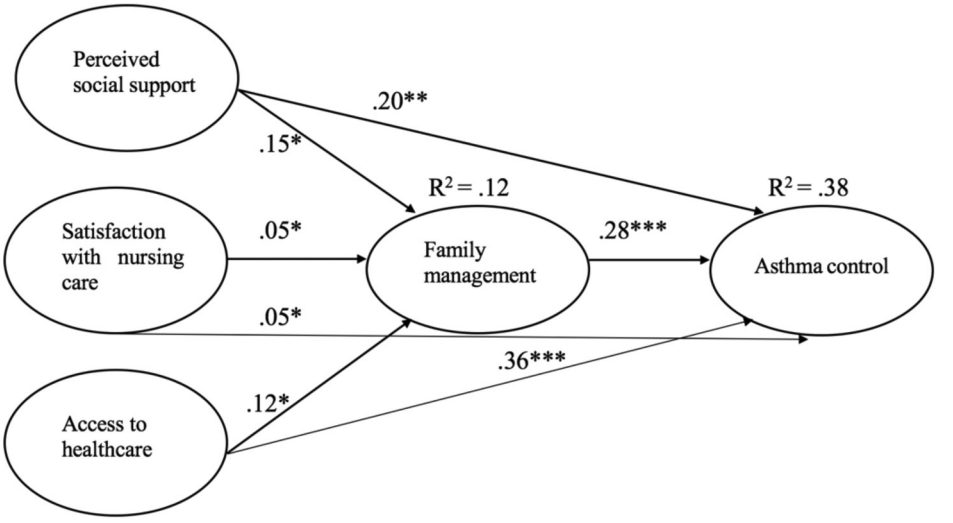
Firstly, the mean score of asthma control was 14.02 (SD = 4.40), meaning very poor control. Among the participants, 274 caregivers (83.5%) evaluated that their children had very poorly controlled asthma, following by poorly controlled, partially controlled and well-controlled asthma (9.1%, 5.5% and 1.8% respectively). Next, subscales of family management and scale of satisfaction with nursing care showed the average score fluctuated around the standard midpoint, while the mean score of perceived social support and access to healthcare were beyond the midpoint of the total score (**Table 2**).

**Table 2** Description of study variables (n = 328)

| Variables | Mean | SD | Possible range | Actual range |
|---|---|---|---|---|
| **Asthma control** | 14.02 | 4.40 | 0 - 24 | 2 - 24 |
| **Family management** | | | | |
| Child daily life (FaMM1) | 12.00 | 4.16 | 5-25 | 5-25 |
| Condition management ability (FaMM2) | 28.47 | 10.17 | 12-60 | 14-56 |
| Condition management effort (FaMM3) | 9.52 | 3.61 | 4-20 | 4-20 |
| Family life difficulty (FaMM4) | 33.48 | 11.47 | 14-70 | 17-64 |
| Parental mutuality (FaMM5) | 18.87 | 6.65 | 8-40 | 9-38 |
| View of condition impact (FaMM6) | 23.54 | 8.11 | 10-50 | 12-48 |
| **Perceived social support** | 80.31 | 15.97 | 0-112 | 14-103 |
| **Satisfaction with nursing care** | 2.79 | 0.85 | 1-5 | 1.32 - 4.68 |
| **Access to healthcare** | 62.16 | 17.70 | 0-100 | 11 - 93 |

**Result of model testing**

Firstly, the assumption of SEM analysis was tested and all conditions were met. There were no missing data. Then the measurement of models of perceived social support, satisfaction with nursing care and access to healthcare, family management, and asthma control were explored using CFA. Findings revealed that these variables had good construct validity. Next, the hypothesized structural model was examined using SEM. The result showed that the model fitted with the data and explained 38% of the variance in asthma control (**Figure 2**). Hence, model modification was not performed.[33]




| | |
|---|---|
| Chi-square/ df | 1.331 |
| RMSEA | .032 |
| CFI | .987 |
| GFI | .944 |
| TLI | .985 |

*p < 0.05; ** p < 0.01; *** p < 0.001

**Figure 2.** Results of Model Testing of Asthma Control Among Preschool Children with Asthma

**Table 3** displays the total, direct and indirect effects of perceived social support, satisfaction with nursing care, access to healthcare and family management on asthma control. Among these variables, perceived social support had the strongest total effect on asthma whereas access to health care had the strongest direct effect on asthma control.

In summary, the model of asthma control among preschool children perceived by family caregivers indicated that family management had a significant positive direct effect on asthma control. And its contextual factors, including perceived social support, satisfaction with nursing care and access to health care had both direct and indirect effect through family management. The model explained 38% of the variance in asthma control.

**Table 3** Total effect, direct effect and indirect effect of influences of variables on family management and asthma control in the causal model

| Variable | Family management | | | Asthma control | | |
|---|---|---|---|---|---|---|
| | TE | DE | IE | TE | DE | IE |
| Perceived social support | – | – | – | 0.41** | 0.20** | 0.21** |
| Satisfaction with nursing care | 0.05* | 0.05* | – | 0.07* | 0.05* | 0.02* |
| Access to healthcare | 0.12* | 0.12* | – | 0.39*** | 0.36*** | 0.03*** |
| Family management | – | – | – | 0.28*** | 0.28*** | – |

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

TE: Total effect; DE: Direct effect; IE: Indirect effect

## Discussion

This finding showed the proportion of each level of asthma control as very poor control, poor control, partial control and good control. The proportion of children with very poor control of asthma in this study is higher than other previous studies.[34] There are several reasons for differences. Firstly, participants in this study reported score of subscales "condition management ability" and "condition management effort" under the midpoint, meaning that caregivers in this study perceived less manageability of the child's asthma. As well, they spent less time and activities to manage their child's condition. Moreover, the subscale "parental mutuality" showed less satisfaction with partners working together to manage the child's asthma. Seemingly, caregivers in this study did not receive enough sharing of ideas and support from their partners for the child's condition. These could be the main reasons influencing asthma control of primary family caregivers. Additionally, data in this study was collected from November 2019–March 2020. This period in Vietnam is the winter–spring season with a mix of rainy and sunny days, so the humidity was high. The weather in this period is usually cold and children are at higher risk of an asthma attack. Lastly, the vast majority of children were newly diagnosed with asthma for less than one year (77.4%). The findings revealed that caregivers may not master caring for their children with asthma and that insufficient accumulation of experience could lead to inappropriate management and poorly controlled asthma.

The model of asthma control in this study revealed that perceived social support had a significant positive direct effect and indirect effect through family management on asthma control. Childhood asthma requires daily vigilance by caregivers to avoid triggers, detect early signs of an asthma attack, follow-ups at clinics or trying to avoid the child missing school days. These situations may lead to physical and emotional tiredness of the child and the caregiver, and financial strain on the family. If long-lasting, these situations will negatively affect the child's health outcomes. Social support is determined as a general mental health resource that helps to reduce burden and stress and assists the utilization of coping strategies for caregivers.[30,35] Studies have revealed perceived

social support as a predictor of asthma control.[10] Additionally social support enables the family caregiver to better attend to the child's illness and enhances their asthma management ability. Caregivers can thus be more confident to integrate the child's asthma condition into family daily life as well as assist with their adherence to a treatment regimen.

Besides support from family members and other significant people, nurses also play a crucial role in clinical achievement. Structural analysis of our model illustrated the direct and indirect effect of satisfaction with nursing care on asthma control. Compared to other healthcare providers, nurses spend more time in communication and interaction with patients and their family during hospitalization, sometimes even after discharge. Nurses not only provide patients and families regular care regarding nursing techniques, but also health education and emotional support. Therefore, satisfaction with nursing care is important to lead caregivers into engaging in positive behaviors[19] in their caregiving as well as the following of medically prescribed care to patients.[36] In addition, caregivers are usually eager to become involved in caring for their children. As a result, satisfaction with nursing care contributes to caregivers' management ability and total quality management.[36] This finding of our study is consistent with some previous studies.[9,37]

Asthma control requires a link with healthcare services. This study found that access to healthcare had both a direct effect on asthma control and an indirect effect through family management. In Vietnam, the cost of medication for children under six years old is mostly covered by health insurance. Additionally, the distances that participants in this study had to travel to the health facility are not far. Bus services are cheap and convenient. Thus available transport resources facilitate caregivers and their children to adhere to any follow-up appointments scheduled and medication use and reduce caregivers' views of asthma impacting on themselves and their family. This finding is consistent with the findings of some previous studies about medication.[38,39] Additionally, another study provided an opposite result in that children without Medicaid insurance were likely to be well controlled.[24] This conflict might depends on the specific healthcare system and policy of each nation.

Regarding family management, the model indicated that this factor had a significant direct positive effect on asthma control. Theoretically, family management is a key concept which describes the interplay of subjective meanings of having a child with a chronic condition, cooperation in the management of family members and integration of the asthmatic condition into family daily life.[12] Brown et al. stated that to manage childhood asthma, parents not only were required to have asthma knowledge, learning how to monitor asthma symptoms and handling exacerbations but also to able to integrate caring into the normal life of the family.[6] Previous studies also revealed the effects of family management on childhood asthma control in the description of subscales.[11,25,40] For example, Han and colleagues found that "view of condition impact" and "condition management effort" were predictive asthma control negatively while "child's daily life" had a significant positive influence.[40]

Furthermore, family management mediated all exogenous variables and asthma control. This means family management is an important mediator in the model of asthma control. It suggests that healthcare providers should pay attention to family management interventions to improve positive aspects and limit negative aspects of family management.[11] This finding is appropriate to Vietnamese culture that parents and family members always spend special care to children, especially when they are sick.

Finally, the findings from this study support the FMSF used to guide the study. In the model of asthma control, perceived social support, satisfaction with nursing care and access to health directly influenced asthma control and indirectly influenced through family management.

## Limitations

The major limitation of this study is its cross-sectional design, thus inferring causal relationship must be done cautiously. The other limitation may be limited generalizability because of the convenience sampling technique.

## Conclusion and Implications for Nursing Practice

The asthma control model illustrated a significant direct effect of perceived social support, satisfaction with nursing care and access to healthcare on asthma control and an indirect effect through family management. Among these relationships, perceived social support had the strongest total effect on asthma control. Therefore, to assist the primary caregiver, nurses should discuss with and encourage the involvement of other family members, especially caregivers' partners to take part in and share responsibility with the primary caregiver. Self-help group meeting among parents is another suggestion that nurses should consider, to enhance the level of social support for caregivers. Additionally, access to healthcare had the strongest direct effect on asthma control. The nurse can use this finding to strengthen access to health care using various strategies such as telehealth to support family caregivers in controlling asthma. Furthermore, family management is an important mediator. Therefore, nurses should pay attention to family-centred care which is considered as the gold standard in pediatric care to protect and improve child health. Hospitals should create and promote cooperation between families and health care professionals by providing healthcare plans that have the involvement of family caregivers in processes. Through these activities, cooperation among family members to take care of their children with asthma would be closer.

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# โมเดลปัจจัยที่มีอิทธิพลต่อการควบคุมอาการหอบหืดของเด็กวัยก่อนเรียนตามการรับรู้ของผู้ดูแลในครอบครัว

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**บทคัดย่อ:** โรคหอบหืดเป็นโรคไม่ติดต่อที่พบได้บ่อยในเด็กและพบเพิ่มมากขึ้นในประเทศเวียตนาม การควบคุมอาการหอบหืดในเด็กวัยก่อนเรียนขึ้นกับผู้ดูแลเด็กเนื่องจากข้อจำกัดของพัฒนาการเด็กและภาวะโรค ทั้งนี้การเข้าใจปัจจัยที่มีอิทธิพลต่อการรับรู้ของผู้ดูแลในครอบครัวเป็นสิ่งจำเป็นในการออกแบบแนวทางการดูแลเพื่อควบคุมอาการหอบหืดในเด็ก ดังนั้นการศึกษาเชิงตัดขวางนี้มุ่งการพัฒนาและทดสอบโมเดลที่สามารถอธิบายอิทธิพลของปัจจัยการสนับสนุนทางสังคม ความพึงพอใจการพยาบาล การเข้าถึงการบริการสุขภาพ และการจัดการของครอบครัวของผู้ดูแลในครอบครัวที่มีต่อการควบคุมโรคหอบหืดของเด็กวัยก่อนเรียน กลุ่มตัวอย่างได้แก่ผู้ดูแลหลักของเด็กวัยก่อนเรียนที่ป่วยโรคหอบหืด เลือกตามสะดวก จำนวน 328 คน จากโรงพยาบาลของรัฐจำนวน 3 แห่งในเมืองดานัง ประเทศเวียตนาม เครื่องมือประกอบด้วย แบบสอบถามข้อมูลทั่วไป แบบทดสอบการควบคุมโรคหอบหืดของเด็กวัยก่อนเรียน แบบวัดแรงสนับสนุนทางสังคม (ฉบับปรับปรุง) แบบวัดการเข้าถึงบริการสุขภาพ และแบบวัดความพึงพอใจคุณภาพบริการการพยาบาล การทดสอบทางสถิติใช้โปรแกรม SPSS 18 และ โปรแกรม AMOS

ผลการศึกษาพบความสอดคล้องของตัวแปรที่กำหนดไว้ในโมเดลกับข้อมูลและสามารถอธิบายความแปรปรวนของการควบคุมโรคหอบหืดได้ร้อยละ 38 พบว่าปัจจัยด้านบริบทมีอิทธิพลทางตรงในการควบคุมโรคหอบหืด และมีอิทธิพลทางอ้อมผ่านการจัดการของครอบครัว การจัดการของครอบครัวมีอิทธิพลทางตรงสูงสุดในการควบคุมอาการหอบหืด ภายใต้ปัจจัยเหล่านี้พบว่าการรับรู้แรงสนับสนุนทางสังคมมีอิทธิพลโดยรวมสูงสุดในขณะที่การเข้าถึงบริการสุขภาพมีอิทธิพลทางตรงสูงสุดต่อการควบคุมโรคหอบหืด พยาบาลสามารถนำผลการศึกษาไปใช้ให้การสนับสนุนของผู้เกี่ยวข้องเพื่อช่วยส่งเสริมการจัดการของครอบครัวให้ดีขึ้น นอกจากนั้นการเพิ่มขีดความสามารถในการเข้าถึงบริการสุขภาพ เช่น การบริการสุขภาพทางไกล จะช่วยสนับสนุนการควบคุมโรคหอบหืด

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**คำสำคัญ :** การควบคุมโรคหอบหืด ผู้ดูแลในครอบครัว การเข้าถึงบริการสุขภาพ การจัดการครอบครัว เด็กวัยก่อนเรียน การสนับสนุนทางสังคม เวียดนาม

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