

Education of Patients with Asthma Leading to the Self-management of their Condition? The primary Health Care Providers' Approach

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¿Está la educación de los pacientes con asma conduciendo al autocontrol de su condición? El enfoque de los proveedores de atención primaria de salud

ABSTRACT

*Asthma is a chronic non-communicable disease considered a serious health problem worldwide. The Chronic Care Model promotes the self-management of patients' chronic conditions. This process requires an active engagement of health professionals to provide education for patients to manage their disease better. **Aim:** this study sought to explore the education process carried out by primary health care providers for asthma patients in two regions of Chile. **Methods:** Nine group interviews with 35 health providers in nine primary health care centers were conducted in two of the country's major urban areas, the Valparaíso and Biobío Regions. Data were analyzed using an inductive approach, with coding followed by category construction and interpretation. **Results:** Based mainly on age and educational level, health professionals construct a patient profile to adjust the information provided and the strategies employed to educate patients. The education is focused on pharmacological treatment and inhalation techniques. Educational strategies are primarily direct instruction through individual one-on-one sessions. Fewer actions were described to help patients choose, control, and correct their daily routines and lifestyle and involve patients in self-awareness and self-regulating their behavior. **Conclusions:** The health care education process for asthma patients focuses on delivering information about the disease and medical treatment. Some issues of the Chronic Care Model, which promotes self-management, are still not addressed.*

Keywords: Asthma; Health Education; Primary Health Care; Self-management.

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Funding: This project was funded by FONDEF ID19110120 y ANID - MILENIO - NCS2021_013

The authors declare no conflict of interest

Received: November 21, 2022.
Accepted: October 10, 2024.

RESUMEN

*El asma es una enfermedad crónica no transmisible considerada un grave problema de salud en todo el mundo. El modelo de atención para personas con condiciones crónicas promueve el automanejo de los pacientes. Este proceso requiere un compromiso activo de los profesionales de salud para proporcionar educación a los individuos, así ellos puedan controlar mejor su enfermedad. **Objetivo:** Este estudio buscó explorar el proceso de educación realizado por los proveedores de atención primaria de salud para los pacientes con asma en dos regiones de Chile. **Métodos:** Se realizaron nueve entrevistas grupales a 35 profesionales de la salud de nueve centros de atención primaria de las regiones de Valparaíso y Biobío. Los datos se analizaron mediante un enfoque inductivo, con codificación seguida de construcción de categorías e interpretación. **Resultados:** Basándose principalmente en la edad y el nivel educativo, los profesionales de la salud construyen un perfil de paciente para ajustar la información proporcionada y las estrategias para educar a los pacientes. La educación se centra en el tratamiento farmacológico y la técnica inhalatoria. Las estrategias educativas son principalmente la instrucción directa a través de sesiones individuales. Se describieron menos acciones para ayudar a los pacientes a elegir, controlar y corregir sus rutinas diarias y su estilo de vida e implicar a los pacientes en la autoconciencia y la autorregulación de su comportamiento. **Conclusiones:** El proceso de educación sanitaria de los pacientes con asma se centra en la entrega de información sobre la enfermedad y el tratamiento médico. Todavía no se abordan algunas cuestiones del Modelo de Atención Crónica, que promueve el automanejo.*

Palabras clave: Asma; Atención Primaria; Automanejo; Educación Sanitaria.

Asthma is a chronic non-communicable disease that affects 262 million people worldwide, from which nearly 461,000 die yearly^{1,2}. Therefore, this disease is considered a serious public health problem, affecting people of all ages, independent of their socioeconomic status^{1,2,3,4}. In Chile, according to the last National Health Survey 2016-2017, the prevalence of asthma among Chileans was 5.4%, but the percentage could be higher as the disease is underdiagnosed⁵.

Asthma requires permanent, adequate, and timely treatment so that patients can reach a compensation level that allows them to attain a nearly normal quality of life^{6,7,8,9}. To this end,

the World Health Organization proposes using the Chronic Care Model^{10,11,12,13,14}, which seeks to empower patients and their families to manage their condition^{15,16,17}. This model includes a component that promotes self-management through patient education. However, patient education by primary health care providers has proven to be challenging. Patients are required to achieve the ability to self-assess their actions, recognize risk situations, identify crises, manage symptoms, adhere to treatment, and adopt lifestyle changes^{18,19,20}.

In the case of asthma, it has been documented that education allows patients to understand their disease and the pharmacological treatment

better, promoting the self-management of their condition^{21,22}. For patient education to be effective, patients' emotions, beliefs, and values must be considered^{23,24,25}.

Although the Health Authority has issued guidelines that promote patient self-management, these guidelines have not been widely adopted²⁶, recognizing that there are opportunities for improvement in patient education. Based on the need to inform the process of self-management in asthma patients, the aim of this study is to explore the education process carried out by primary health care providers with asthma patients in two regions of Chile.

Method

We conducted a qualitative and descriptive study, following an inductive strategy to identify emerging themes about what education is and how it is delivered. Participants of this study were health professionals from nine family health care centers called CESFAM in Chile. The health centers included in this study are located in two of the country's major urban areas, the Valparaíso and Biobío Regions. Each CESFAM has an Adult Respiratory Disease Program (ERA in Spanish) composed of a team of 3 to 5 health professionals: A primary general practitioner (GP), a nurse, a kinesiologist and a certified nursing assistant. At each center, we conducted group interview sessions with the ERA teams, so the total number of participants in the study was 35 health professionals.

We first contacted the CESFAM to obtain authorization, approached the ERA team, and convened them in a face-to-face meeting. The complete team was invited to participate, with no sampling procedure. Although all agreed to participate, not all of them could attend. The group interview was a technique that addressed: context, setting, and interaction with the patient, contents addressed in patient education, strategies employed in the education process, and experience and general evaluation of patient education. Interviews took place between February and March 2020 at the health care location, were conducted in Spanish by three research team members, and lasted about one hour each. All interviews were audio-recorded

and sent for transcription to be later analyzed. Additionally, one of the interviewers took notes of the whole interview process.

The data analysis was developed following the thematic analysis method Braun y Clarke, 2006²⁷, an inductive, content-focused approach with category construction and interpretation. The process began with an extensive reading of the interview transcriptions looking for content relevant to the research questions. Once the meaningful units of analysis were identified, they were coded and grouped into broader categories and sub-categories. An initial codebook was developed and refined iteratively by members of the research team. Categories and sub-categories were examined interpretively and grouped, linking ideas to a broader concept.

This study was revised and approved by the Scientific Ethics Committees according to Act N°174, accredited by the respective Chilean authority²⁸. All participants provided informed consent.

Results

Results were organized into three main categories that described the education process in asthma care: 1) Constructing a patient's profile; 2) What to educate? Physiological mechanism of the disease, pharmacological treatment, and inhalation technique; and 3) How to educate? Conditions and strategies in patient education. Each category was organized into sub-categories described below (Figure 1) and illustrated by excerpts from the interviews. At the end of each excerpt, the respondent group was identified by roman numerals".

1. *Constructing a Patient's profile*

The first category that emerged was called constructing a patient's profile, where professionals, based on available information, developed a profile of the user to help them to determine better what information to provide and how to do it. Interviewees identified four main characteristics to develop the profiles: educational level, age, functionality (patients' degree of functional independence), and motor coordination.

According to patients' education levels, inter-

viewees use different strategies to communicate treatment plans and to facilitate understanding and retention of the information, especially for patients with low educational levels. Quote C1 from Table 1 illustrates this approach.

Participants identified age as a relevant factor when deciding what and how to communicate with patients. They recognized three subgroups: a) adolescents, who often forget to follow the

Table 1. Description of the participants of each interview.

Group Interview	Participants
I	1 Physician 1 Kinesiologist 1 Chemical pharmacist 1 Nurse
II	1 Nurse 1 Kinesiologists 1 Physician
III	1 Nurse 1 Physician
IV	1 Kinesiologist 4 Physicians
V	2 Kinesiologists 1 Nurse
VI	1 Kinesiologist 2 Physicians 1 Nurse
VII	1 Physician 2 Kinesiologists 1 Upper level Nurse Technician
VIII	2 Physician 2 Kinesiologists 2 Upper level Nurse Technicians 2 Nurses
IX	1 Physician 1 Kinesiologist

treatment; b) adults who usually have problems turning up for their medical appointments due to their work schedules; and c) older adults, who, although they do not usually forget their treatment, have more difficulties understanding, learning, and administering the treatment (including use of inhalers) due to motor function and coordination problems associated with aging. Quotes C2 and C3 from Table 2 illustrates this point.

The patient profile was also defined in terms of the patient's degree of functionality, that is, functional independence and motor coordination required to execute the inhalation technique properly (e.g., inhale, exhale, press down on the inhaler and use it with the aero chamber). Quote C4 from Table 2 illustrates this.

2. What to educate? Physiological mechanism of the disease, pharmacological treatment, and inhalation technique.

Participants reported the main contents that addressed the education process. It included the physiological mechanism of the disease, pharmacological treatment, and the inhalation technique, as well as the effects of the treatment.

Quote W1 from Table 3 illustrates the physiological aspects of asthma informed by health providers.

Pharmacological effects, particularly regarding the function of different types of medication, are also addressed: Interviewees reported that as corticoids are slow to act, then, patients do not perceive an immediate relief, so they prefer to use a bronchodilator. Quote W2 from Table 3 illustrate this.

Regarding the inhalation technique, interviewees reported that in addition to explaining the technique step by step, they make sure patients understand the rationale behind each of the steps, including why they must shake the inhaler canister before administering a dose and how they are supposed to use the aero chamber and clean it after using (Quote W3 in Table 3).

Interviewees also reported explaining to patients how to identify asthma crises (Quote W4 in Table 3).

Promoting self-awareness is another goal of

Table 2. Excerpts for “Constructing a patient’s profile” interviews.

Quote	Excerpt
C1	"There are many patients that have, hmm [...] little education. Even patients that [...] don't know how to read [...], so the way we educate varies a little [...] to teach them or give some kind of [medical] indications to these patients" [IV].
C2	"I believe that forgetting [how to administer the treatment] is more common in adolescents. [...] I do not see a forgetfulness issue in adults. There are mainly difficulties with the technique, and this is based on age [...]. Many people can inhale but do not have the strength in their hands to press the inhaler. And [often] there is no one to help them in their homes" [V].
C3	"There are younger patients, who are in their twenties or thirties, who cannot attend their follow-up appointments due to conflicts with work schedule; they work outside the city or are full-time students... For seniors who live alone, we try to visit them at their homes" [IV].
C4	"Because [patients], unless I 'shut' their nose, won't breathe using their mouth only. Some adult patients do achieve coordination, but older adults [...] I don't know how to best assist them [...] usually struggle to handle the nozzle, they don't coordinate their breathing, and they are less capable of inhaling deeply and even less capable of breathing in [the medication]" [III].

patient education. Some health providers, although a minority, refer to the need to help patients to self-assess the severity of symptoms, warning them that a worsening condition may indicate improper use of the inhaler or other problems (Quote W5 in Table 3).

3. How do we educate? Conditions and strategies in patient education

The third category that emerged from the analysis was the conditions and strategies health providers took in the education process. Three aspects were recognized: timing and time allocated for the education, roles among the clinical care team, and educational strategies according to the patient profile.

Interviewees stated that although education is a continuous process, it is more intensive at the beginning of the treatment and starts at the first control visit. The quality of the education will depend on the available time for the clinical

visits. Interviewees emphasized that after the first control visit, they continue to reinforce the indications, especially when observing that the patient's condition is worsening. Health providers assumed that patients' symptoms typically worsen when they stop taking their medications or do not properly perform the technique inhalation.

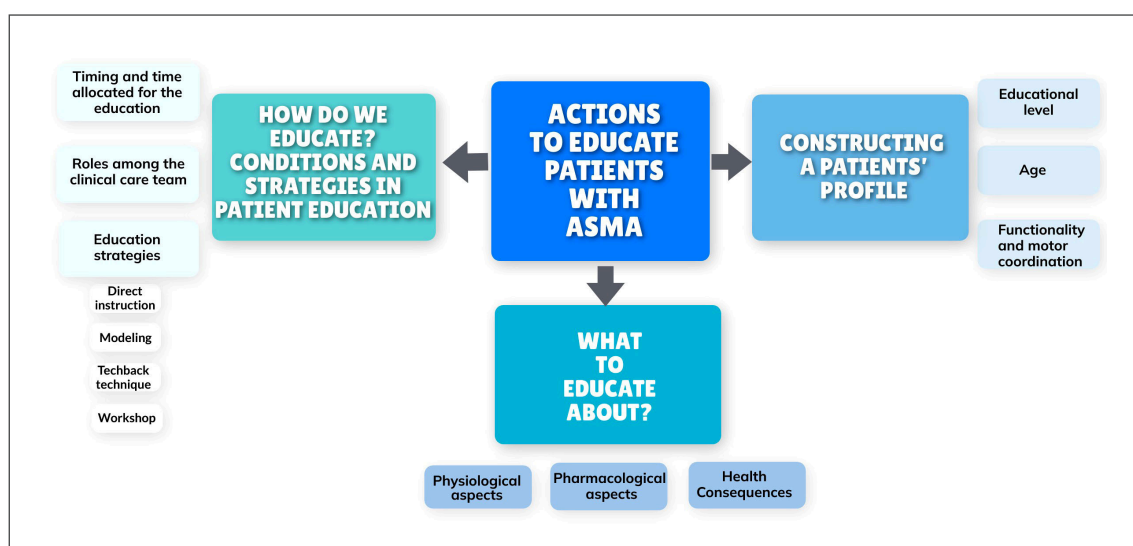
Regarding the roles of the professionals in the education process, interviewees reported that nurses and kinesiologists are more often in charge of providing education since they have been allocated time to follow up with patients (Quote H1 in Table 4).

Health professionals use different strategies to educate patients: direct instruction, modeling, teach-back techniques, and workshops.

Direct instruction was favored to provide information about asthma, symptoms, physiological mechanism, and pharmacological treatment. Modeling was also employed to teach patients how to use the inhaler and aero chamber and

Table 3. Excerpts for “What to educate” interviews.

Quote	Excerpt
W1	“I explain to patients that the air passes through the tube, which has a specific caliber, and that asthma causes chronic inflammation of the bronchi, which makes them more sensitive to things that are in the air, like pollen, which produce inflammation, and then the tube tightens up” [I].
W2	"When I show them the inhaler, the first thing I do is to explain what each medication does and the difference between a corticoid and a bronchodilator, the time they take to work, and that one of them is for rescue, and the other one has long term effects" [VIII].
W3	"[I explain to the patients] why they must always use the aero chamber, regardless of how uncomfortable it may be.... sometimes it is too big (to carry around) [...] if they go out [...] there are people that prefer to use the puff directly [without the aero chamber]), but the truth is that this is bad for them" [I].
W4	“In general, they [patients] know that their asthma is not controlled when they have to use salbutamol too frequently when they feel a sensation of fatigue, and when they have difficulty breathing at night” [VII].
W5	"We ask them how they feel [when they use the inhaler] compared to the usual treatment. If they feel worst, that may be due to an infection or inadequate use of the medication. The idea is that patients should be able to identify when there is something different from their usual day-to-day condition" [VII].

**Figure 1:** Emergent Categories and Sub-categories.

how to properly execute the inhalation technique.

Patients were asked to teach back the indications to verify their comprehension of the medical advice (Quote H2 in Table 4).

Finally, in some health centers, patients were encouraged to participate in workshops for asthma patients. These are group meetings designed to inform patients about asthma, its treatment, and inhaler use, as well as to clarify doubts emphasizing the chronic condition of the disease and the importance of treatment adherence. Members of the ERA staff ran these workshops and were implemented at least in four of the nine centers included in this study.

Participants also reported using visual aids designed to facilitate instruction based on the patient's daily routine. For example, when designing the schedules for the drugs, they make sure that the times match the users' routine, such as the time of meals (i.e., breakfast, lunch, or dinner). They may also consider the patient's living space to make it easier for patients to remember to take their medications (Quote H3 in Table 4).

The visual aids mentioned are usually handcrafted and designed to help users retain the information. Instructions were written on the medicine packages, using illustrative photographs or handouts with large and legible writing (Quote H4 in Table 4).

Participants stressed the need to adapt their mode of communication according to patients' time of diagnosis or knowledge of the disease (Quote H5 in Table 4).

Discussion

The purpose of this study was to characterize the education process run by primary health care providers for patients with bronchial asthma. The actions reported were mainly oriented toward teaching about the disease, the pharmacological treatment, the proper use of inhalers, and the need to follow the treatment. The education process was generally run by nurses and kinesiologists and is delivered along with the whole treatment. The predominant educational strategy was direct instruction in individual sessions.

Table 4. Excerpts for "How do we educate" interviews.

Quote	Excerpt
H1	"I get the indications from the doctor to educate patients, and I do the education ... given that doctors have less time and I have more time available" [III].
H2	"One must verify that the inhalation technique is being performed properly. We ask patients [...] to demonstrate the technique for us, and we verify they are using the inhaler properly" [IV].
H3	"[I say to the patient:] 'one puff in the morning and one in the evening, or if you can... what time do you get up'? I ask. If the patient wakes up at eight o'clock, I recommend leaving the aero chamber and the inhaler on the night table and administering one puff upon waking up and one before going to bed" [IV].
H4	"All the medications state in writing on the prescription, '2 puffs every 12 hours. I tell them, but some people don't quite understand.'" [VIII].
H5	"There are many synonyms, depending on the patient. With a more experienced patient, we generally talk about the "rescue inhaler" and the "maintenance inhaler" [VII].

There are efforts to adapt the education process to patients' characteristics, adjusting the information and language to the users' age and educational level. Building a profile for each patient is aimed at customizing the information provided, consistent with recommendations from guidelines for people with chronic illnesses^{3,12,26}. Regarding health education strategies, the professionals try to simplify the technical aspects of the treatment for each patient. These strategies positively influence patients' conduct to achieve new health care behaviors^{8,16,18}.

Education gave patients the knowledge and skills needed to maintain their health and address issues stemming from their disease^{29,30,31}. All these actions favor implementing a self-care model; however, a more holistic approach is still needed to achieve effective self-management, consistent with reports from previous studies^{18,19,20}.

Our findings showed that health care providers actively involve users in their care through one-on-one interactions and group workshops to provide information about the disease and medical treatment. However, no actions were described to help patients to choose, control, and correct their daily routines and lifestyle^{26,32}. Moreover, there was no mention of actions to involve patients in processes of self-awareness and self-regulation of their behavior. A probable explanation for this is that the traditional care model continues to operate in health care, and the recent chronic care model, which promotes self-management, still does not prevail, despite the endorsement from local and international health organizations^{15,26}. It should be noted that other aspects recommended for the promotion of self-management and the personalization of health care, such as the beliefs and values of the users, were not examined in depth in this study. However, interviewees did not mention those aspects when deciding how to approach patients and their treatment.

What has been referred to as collaborative health care, a productive interaction generated between an informed user and a proactive team to improve health outcomes^{26,33} is still in progress. In general, participants described actions

that align with the care models promoted by the Health Authority, linked to the management of chronic users, seeking to empower them and make decisions based on consensus³⁰. However, some challenges persist, such as the need to focus on the information exchange and the affective and behavioral components of the self-care process to support lifelong behavioral changes.

Furthermore, our findings highlight the limitations that the health care team should address to adapt education to the patient's profile. These limitations include difficulties such as low educational level of patients, older adults with cognitive or motor skills impairment, or patients that cannot attend appointments due to working hours. All these aspects may become barriers that inhibit self-management¹⁵. These barriers and limitations could contribute to worsening the disease, higher health expenditure, work absenteeism, and deterioration of quality of life and functionality. Hence, the National Health Authority is promoting the provision of user-centered care, including a flexible scheduling system to accommodate users' needs and availability.

We want to emphasize the cultural adaptations of the care process that were identified in this study, which in the past had been under a passive and reactive paradigm, mainly focused on solving acute manifestations of the disease, and which are now seeking to promote support for self-management as a strategy to strengthen health care delivery²⁶.

Social desirability and recall bias are potential limitations of this study which may be derived from participants reporting only those actions they remember or decided to share. Future studies that use observational data to complement the information are recommended.

Conclusion

This study explores the educational process performed by health care providers to support the self-management of patients with asthma. The education implemented gives patients the knowledge and skills to maintain their health but needs to address other components of the self-management process of a chronic condition.

Acknowledgements

The authors would like to thank the health management boards and family health centers participating in this study. This recognition extends particularly to the health teams dealing with acute respiratory illness (ERA).

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