

Supporting self-management of asthma through patient education

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ABSTRACT

Asthma affects people worldwide. In developed countries 1 in 12 individuals suffer from asthma, while in Ireland this ratio is closer to 1 in 10. Managing asthma symptoms and triggers reduces the potential exacerbation of asthmatic attacks. This article identifies the importance of asthma management, triggers, inhaler techniques and self-management for optimal health. Education by nurses and health professionals can make a significant contribution to asthma care and self-management. The purpose of patient education for self-management of asthma is twofold: to raise awareness of effective inhaler technique and to support self-management of asthma triggers for health and symptom control.

Key words: Asthma ■ Asthma management and triggers ■ Inhaler techniques ■ Patient education ■ Self-management ■ Long-term conditions

The Global Initiative for Asthma (GINA) (2017) defined asthma as a heterogeneous disease, usually characterised by chronic airway inflammation. It is defined within the history of respiratory symptoms such as wheezing, shortness of breath, chest tightness and coughing that vary over time and in intensity, together with variable expiratory wheezing. International evidence indicates that asthma is a disease that can cause significant distress for the health and wellbeing of patients in terms of managing their symptoms and the intrinsic and extrinsic triggers that have the potential to exacerbate an asthma attack (Hughes and Dunne, 2016). The British Thoracic Society and Scottish Intercollegiate Guidelines Network (BTS and SIGN) (2016) joint guideline on asthma endorses the importance of self-management of asthma; self-management is defined by the Health Service Executive Ireland (2018) as the tasks that individuals must undertake to live with chronic health conditions such as asthma, diabetes, and heart failure.

Nurses in general and more specifically those working in the field of respiratory health have an active role as health promoters and patient educators to support optimal health for patients with asthma. Whitehead (2009) contended that

the delivery of health education and health promotion can be disorganised and random and proposed a new theoretical framework to integrate planned health education/promotion activities into nursing practice—however, the focus on health promotion, patient education and the management of health in primary care has increased significantly since then. The process of communicating health messages is important as it influences how information is understood and used to enable people to maximise their health potential (World Health Organization (WHO), 2013). This article discusses the potential of patient education and health promotion as a way of supporting effective self-management of asthma for patients over 18 years of age.

The impact of asthma

WHO (2018) states that approximately 235 million people live with asthma, and that the low to lower-middle income countries account for 80% of asthma-related deaths. Asthma UK (2016) reported that about 5.4 million people in the UK are receiving treatment for asthma, which is equivalent to 1 in every 12 adults, while the British Lung Foundation (2016) noted a higher prevalence of asthma observed among women (51%) than men (49%). The National Institute of Allergy and Infectious Diseases (2017) in the USA reported similar findings where approximately 24 million individuals have asthma, which, when compared with recent population figures results in a ratio of 1 in every 13 individuals, with a cost to the USA of \$56 billion though medical treatment, lost days and early deaths. The Asthma Society of Ireland (2013) stated that Ireland has the fourth highest prevalence of asthma in the world. Approximately 470 000 Irish people in a population of 4 581 296 have asthma, which is a ratio of 1 in 10. When measuring Ireland's prevalence of asthma against international findings, it appears that Ireland has one of the highest levels (adults and children) of asthma in the world. One individual dies a week from asthma in Ireland and every 26 minutes an individual visits the emergency department due to asthma-related conditions (Asthma Society of Ireland, 2015a). On average, an adult with asthma can miss up to 12 working days a year (Asthma Society of Ireland, 2013), and the total cost of asthma to society is in the region of €501 million a year (Asthma Society of Ireland, 2015a).

Appropriate inhaler use

Health Service Executive Ireland (2016a) recommends that patients use reliever and preventive inhalers as their main asthma treatment, together with avoiding asthma triggers.

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Other treatments are available for asthma that is not controlled with inhalers alone (NHS Choices, 2018) but they remain the foundation of asthma self-management.

Inhalers are devices that deliver medication to the airways in the treatment of chronic respiratory diseases. They relieve and improve patients' symptoms when they are used correctly, therefore good inhaler technique is essential to ensure effective therapy. Many international guidelines support skills training, that is, training in the correct use of inhalers—GINA (2017:56) recommends that all asthma patients should have access to training on inhaler use along with information on asthma and personal self-management guidelines on symptoms, peak flow monitoring and a written asthma action plan 'to show how to recognise and respond to worsening asthma'. Furthermore, the BTS and SIGN (2016) guideline highlights that the inhalers should only be prescribed after patients have received sufficient training in their use and have demonstrated a satisfactory inhaler technique—and advises avoiding generic inhaler prescribing (which can lead to a situation where patients end up with an unfamiliar device).

Asthma patient care can improve with consistent and frequent monitoring of patient inhaler techniques (Joels, 2012). A study by Holmes et al (2014) used a bavaoustic monitoring device, attached to the patient's inhaler to record the sounds the patients produced while using their inhaler; the researchers pointed out that poor technique leads to reduced clinical outcomes, medications wasted, and higher healthcare costs. This echoes the points previously made by of Giraud and Roche (2002) and Wechsler (2009) that ineffective inhaler technique is associated with a lack of asthma control, an increase in severe symptoms, and a higher likelihood of hospitalisation.

Jha et al (2016) recommended that all patients need to receive education regarding their inhaler technique and medication dosage. Without the correct inhaler technique, the benefit to the patient is lessened. Therefore, the inhaler technique used by patients needs to be reviewed at regular intervals for optimal health benefits. Mismanagement of inhaler techniques is common in patients, therefore patients do need to master their adherence to ensure good compliance with their medication regimen (Murphy, 2016).

Moreover, Hickey (2014) found evidence to suggest that health professionals lack the ability to teach inhaler technique properly. This has implications for the effective self-management of patients with asthma. Baverstock et al (2010) assessed 150 healthcare providers and found that only 7% could demonstrate all the recognised and required steps in administration of an inhaled medication.

Poor technique is not the only issue, however—as Holmes et al (2014) pointed out, poor inhaler adherence can mean non-use, haphazard or excessive use or poor inhaler techniques. The Asthma Society of Ireland (2016) noted the high cost of asthma medication in Ireland relative to elsewhere and linked this to patients not taking their prescribed asthma medication. Nurses have an important role to play in educating asthma patients on the importance of compliance with their treatment and with the correct inhaler techniques. An important rule to remember when educating adults about inhaler techniques is to reduce the

Box 1. Summary of triggers

- Stress
- Smoking
- Allergens/environmental
 - Dust mites
 - Pillows
 - Dampness
 - Pets
- Colds and flu
- Exercise

number of devices and always follow up the teaching session with written instructions in an easy-to-read leaflet (Egbert and Nanna, 2009). However, it is also worth remembering that through lifestyle and behavioural changes patients can reduce the effect of asthma on their lives, potentially reducing the need for expensive medication.

Asthma triggers

Patients with asthma need to be aware of both the intrinsic and extrinsic triggers that can cause an asthma attack and aggravate their symptoms. Some asthma triggers may be intrinsic to adults while others may be grouped as non-allergic extrinsic triggers (GINA, 2017). The main asthma triggers are shown in *Box 1*. Asthma triggers are linked with severe asthma attacks and psychological triggers can be associated with a lack of asthma control (Ritz et al, 2014). Nurses need to be aware that when patients are exposed to triggers it can cause them to recall a previous memory of the trigger and its impact on their health, which in turns has potential implications for stress and adverse effects. Knowledge and avoidance of these asthma triggers are important in the self-management of asthma (BTS and SIGN, 2016).

Stress

Psychological factors experienced by patients with asthma, including stress, are examples of intrinsic asthma triggers. Controlling psychological factors may reduce the severity of their symptoms and improve the management of their disease. Yorke et al (2006) were unable to draw a conclusion on the benefits of psychological interventions in the treatment of asthma, but argued that some psychological interventions are helpful. However, further evidence-based research is required as extreme emotional expressions such as stress and anxiety may cause an asthma exacerbation leading to hyperventilation and hypocapnia. These symptoms can cause a narrowing of the airways resulting in an asthma attack (Sharon et al, 2013). The Mayo Clinic (2017) pointed out there is uncertainty whether relaxation therapy techniques such as yoga and hypnosis can assist asthma patients but acknowledged that such interventions may reduce stress levels, which are a known asthma trigger. Patients need to be made more aware of their symptoms and the triggers that cause or aggravate their asthma attacks to be better able to deal with their condition.

Smoking

A study by Shimoda et al (2016) showed that smokers with asthma had signs of airway inflammation. Furthermore, smoking impaired the effectiveness of inhaled corticosteroid treatment

(i.e. preventive inhalers), which has important implications for the management of patients with asthma who smoke. Passive smoking is also a factor to consider—at least 75% of people with asthma will become wheezy in a smoky room (Asthma Society of Ireland, 2018a). Stopping smoking is the most important health improvement a person can make to improve their health, at any age. Ireland has been a leading example in regard to smoking. Over the past decade, government policy has emphasised and focused on consumer-directed anti-smoking campaigns with great success (Department of Health (Ireland), 2014). Nurses have an important role in the education of patients on the importance of compliance with smoking-cessation regimens to promote health. The fundamental goal of any nurse is to encourage and promote patients to choose or at least consider the healthier choice.

Colds and flu

The Asthma Society of Ireland (2018b) notes that colds and flu, along with any throat and nose infections, can act as asthma triggers. Therefore, the signs of these conditions should not be ignored and must be addressed immediately. A recommendation from the Asthma Society of Ireland (2018b) is to take the annual flu vaccination and pneumococcal vaccination for those with severe asthma. Health Service Executive Ireland (2016b) outlines the considerations for frequency of pneumococcal vaccination dependent on age and individual's vaccination history. Similarly, Asthma UK (2018) states that cold and flu can set off narrowing of the airways, which can lead to an asthma attack. Furthermore, it highlights the importance of taking the prescribed preventive inhaler as avoiding colds and flus is a challenge, however, these measures can help prevent an asthma exacerbation.

Exercise

GINA (2017) noted that exercise is good for health and is still an important activity for asthma patient to perform for numerous health benefits. However, 80% to 90% of asthma patients report experiencing asthma symptoms during moderate exercise (Wright et al, 2010). A study by Wright et al (2010) considered exercise as an asthma trigger especially in individuals with high body mass index (BMI) when compared with individuals with a lower BMI. BTS and SIGN (2016) state that exercise-induced asthma is a sign of poorly control asthma and requires patient medication control to be reviewed. However, although GINA (2017) also states the best way to avoid exercise-induced asthma is to effectively control asthma symptoms, it also recommends taking extra medication before exercising if required.

Allergens/environmental

In the USA, the Vermont Department of Health (2013) included a framework goal to reduce exposure to environmental triggers in the home and at work followed by improvement in patient education on asthma and self-management practices.

Dust mites

An allergen is a substance that causes an allergic reaction in someone who is hypersensitive to it. Dust mites are one of the best known allergens that trigger asthma. GINA (2017) suggests

performing allergy tests to measure specific immunoglobulin in the serum that may identify allergen exposure as a trigger for asthma attacks. Gotzsche and Johansen (2011) conducted a systematic review (55 randomised trials, 3121 people) on house dust mites and asthma but found no effective control measure to reduce the exposure to dust mites for patients with asthma. Singh and Jaiswal (2013) in another systematic review considered humidity control measures in the home environment of patients with asthma. Their findings showed that there were no significant differences in house dust mite levels and antigen levels, in contrast with previous studies. There was also no noteworthy difference in the quality of life, medication requirements, visits to the doctor or emergency department, or hospitalisations for the asthma patients.

Pillows

It was commonly thought that artificial-fibre-filled pillows and bedding are less likely to gather allergens than feather-filled pillows and bedding. However, Campbell and Gibson (2009) found that while feather bedding may in fact be less likely to cause wheezing, further investigation and research is required to establish the effects of feather bedding on the severity of asthma. Matsui et al (2016) advocated the use of allergen-impermeable mattress and pillow encasements as being highly effective in reducing dust mite allergen in beds.

Dampness

Environmental factors have a role to play in triggering asthma. Farrell et al (2008) highlighted the link between damp housing and respiratory problems in Ireland in both adults and children and showed a clear relationship between damp and mould growth and chronic asthma problems. The direct effects on the patients include thermal stress on the body that can increase the risk of respiratory and allergic conditions (Farrell et al, 2008). Matsui et al (2016) explained that excessive moisture in homes due to inadequate ventilation or other building issues contributes to a rise in mould exposure and attributed this to an increase in cases of asthma. Additionally, adults living in under- or over-insulated or heated homes could present with obstructive airway conditions such as asthma (Denning et al, 2014).

Pets

Matsui et al (2016) pointed to cats and dogs as major asthma allergens and found that when pet-sensitised asthma patients were exposed to these allergens, asthma problems increased. Matsui et al (2016) recommended complete removal of these source allergens from the home, although even after permanent removal of a pet it can take several months before significant reductions in allergens are noticed. Pet removal has also been recommended by GINA (2017) for the management of asthma, however, pet ownership can remain high among asthma patients. Kilburn et al (2001) recommended air filtration units in the homes of pet-allergic asthma patients as a solution to reduce allergen exposure and increase the possibility of allowing those patients to keep their pets. Kilburn et al (2001) also noted that complete avoidance of pet allergens is near to impossible, as

the allergens can be found in many environments inside and outside the home (including at school, or homes of extended family members).

Asthma education

After reviewing the literature it is evident that there are various names used for the plans created to manage asthma by different bodies in Ireland, the UK and worldwide. For example, they may be referred to as asthma management plans, asthma action plans, personalised asthma action plans, written asthma plans, self-management plans for asthma, or personalised action plans. However, GINA (2017) calls it an asthma action plan, therefore for the purpose of this article that term will be used.

Asthma education to foster self-management is a key recommendation to improve health outcomes and patient wellbeing (GINA, 2017). Pinnock (2015) argued that self-management education is not an optional extra, that as patients are already having to manage their own condition day to day, the health professional has a duty to ensure that their self-management approach is the correct one. There are several key approaches to improving asthma education (*Box 2*)

The Irish Department of Health (2015) recommends that all asthma patients should have an asthma action plan. BTS and SIGN (2016) also recommend all patients with asthma should be offered self-management education, which should include an asthma action plan and be supported by regular professional review. Pinnock (2015) argued that the evidence in support of asthma self-management plans is overwhelming and concluded that the provision of asthma plans combined with and supported by regular reviews almost halves the risk of hospitalisation, reduces emergency visits and unscheduled consultations while improving asthma control and life quality. Asthma UK (2018) agreed when stating that individuals with asthma action plans are four times less likely to go to hospital with an asthma attack. Asthma management plans aim to help patients to take control of their condition by providing a clear pathway of care to follow. Additionally, support structures provided by the Asthma Society of Ireland and Asthma UK include access to free confidential advice from specialist nurses along with several documents available on their websites. The Asthma Society of Ireland (2015b) and Asthma UK (2016) recommend personal asthma action plans to assist patients with their asthma in making the necessary changes to their responsiveness of their symptoms. The benefit of such an approach is that asthma patients experience a one to two thirds reduction in admissions to emergency departments and as inpatients (GINA, 2017).

However, there are many challenges to overcome when supporting self-management including health literacy (Egbert and Nanna, 2009; Paasche-Orlow and Wolf, 2010). Literacy is a further cause of concern as additional support provided by health professionals is often in a written format, so low literacy skills may explain why some patients find it difficult to adhere to specific management plans to achieve symptom control. Nurses facilitate and teach patients how to self-assess, decide on wellness goals, plan on actions to meet those goals and self-evaluate success (Clark, 1997). It is imperative that nurses have a clear understanding of health psychology, social psychology

Box 2. Core elements of asthma education

- Written asthma action plan
- Patient education by health professionals
- Health promotion

and social cognition theories to inform how they deliver health messages effectively to patients (Serembus, 1998). Marmot et al (2008) suggested that investment in health education has the greatest potential to reduce the social determinants of health. Therefore, improving asthma education aims to create greater awareness, knowledge and an enhanced ability to make healthier choices for symptom control.

Health promotion

The last decade has seen an increase in the amount of health education and health promotion activities integrated into nursing practice. Patient education is embedded in health promotion. Nurses are ideally placed to deliver health promotion due to their interaction with both patients and their relatives (Shoqirat and Cameron, 2013). However, health promotion is fraught with challenges, even though changing one's lifestyle and avoiding unnecessary risk factors may prevent an exacerbation of asthma. Tones and Tilford (2001) argued that in order to be self-empowered individuals need a high degree of actual control over their lives and health and also need to possess a set of competences and certain personality characteristics. Nurses have a significant contribution to make by applying specific educational strategies and health promotion models underpinned by the principles of the Ottawa Charter (WHO, 1986). These principles include building healthy public policy, creating supportive environments, developing personal skills, strengthening community action and re-orienting the health service towards primary care. They continue to shape the development of health promotion on a worldwide scale and remained in focus at the WHO's 8th Global Conference on Health Promotion in Helsinki in 2013. Health promotion is a process of enabling people to increase control over their lives whereas health education provides information with a view to influencing people to change their behaviours, attitudes and knowledge of health (WHO, 1986). While the terms 'health education' and 'health promotion' are used interchangeably (Maben and Clark, 1995), health promotion emphasises the development of personal skills, empowerment and raising the consciousness of one's health, which are important factors when promoting self-management of patients with asthma (Greaves and Campbell, 2007). Empowerment centres around the promoting of health and enhancing an individual's ability to feel in control of their lives and to address and resolve their own difficulties. Traynor (2003) stated that empowerment is a fundamental belief about human identity, while Whitehead (2009) argued that community empowerment is a key to one's individual abilities in health promotion.

Currently, there is no cure for asthma (Akinbami et al, 2012). Self-management and asthma management plans combined with empowerment have the potential to enable patients with asthma to take more responsibility for their health by helping

KEY POINTS

- There are many intrinsic and extrinsic factors that can affect the severity of asthma
- Patient education on these factors is a central part of encouraging asthma self-management
- Training in (and regular review of) effective inhaler technique is a further requirement
- Provision of a written 'action plan' can help patients with asthma to avoid severe attacks and hospitalisation
- Nurses can play a key role in empowering patients to self-manage their condition

them to take more control over their lives and to identify opportunities available to them to support their health in their local communities. The process and outcomes of health promotion should be recorded in patients' documentation and prospective health promotion needs should be identified when planning care (Tones and Tilford, 2001). The delivery of patient education and health promotion must be culturally sensitive (Purnell, 2014) and respect the health literacy of patients. Nurses need to adjust their patient education and health promotion messages to suit individual needs.

Conclusion

There are many intrinsic and extrinsic factors that trigger asthma. Asthma management plans are shown to be an important tool in the management of this chronic condition. Additionally, good-quality inhaler techniques are effective in the prevention and management of asthma. Collectively, these measures have the potential to reduce the cost of asthma management. Internationally, asthma societies provide valuable resources to assist and guide self-management for health and wellbeing. The importance of self-management lies in the impact it has on patient outcomes. However, effective self-management depends on patients having a well-informed understanding of their asthma management plan. The quality of education delivered by nurses and other health professionals is paramount to help patients' understand their asthma and improve their self-management skills for optimal health. Nurses skilled in delivering health education and promotion can make a significant contribution to asthma self-management. **BJN**

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CPD reflective questions

- What can you do to support self-management of asthma in your clinical setting?
- What can you do to enhance patient education and the use of asthma action plans?
- Can you identify the particular triggers that may contribute to an exacerbation of asthma in an individual patient?
Consider the triggers identified in the article and reflect on one with your team

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