

Quality of life in food allergy

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Purpose of review

The purpose of this review is to provide a review of studies examining health-related quality of life (HRQL) in food-allergic individuals, with an emphasis on publications since 2007.

Recent findings

Over the past few years, an increasing number of studies have addressed the impact that food allergy has on HRQL. Many studies have used generic quality-of-life instruments to compare HRQL between food-allergic patients and healthy controls or between food-allergic patients and persons with other disease states. A significant achievement for this area of investigation is the existence of validated, disease-specific quality-of-life instruments for all age groups. These have been validated in multiple countries and translated into multiple languages.

Summary

Food allergy clearly affects a patient's HRQL. With validated, disease-specific instruments to measure HRQL, researchers will be able to use HRQL as an end-point in therapeutic clinical trials, and clinicians will have a further aid in caring for patients suffering from food allergies.

Keywords

bullying, food allergy, food hypersensitivity, psychosocial, quality of life

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Introduction

Food allergy is common and appears to be increasing in prevalence [1,2]. Unfortunately for food-allergic patients and for their families, there remains no current, approved curative treatment for food allergy; therefore, the mainstay of therapy is food avoidance and emergency treatments in the event of an accidental ingestion. Parents and patients therefore must be vigilant about food allergen avoidance in multiple settings (e.g. school, camp, restaurants, social gatherings, etc.). This burden and fear of accidental ingestion can lead to reduced health-related quality of life (HRQL). Over the past decade, there has been an increasing body of literature defining and quantifying the effect that food allergies have on quality of life. We review these studies, concentrating on recent publications since the last reviews on this topic from this journal [3,4••]. We also provide opinions on how this aspect of food allergy should be taken into account when caring for patients.

Health-related quality of life

Health-related quality of life refers to the impact that a health condition may have on three major aspects of overall health: physical, social, and emotional or psychological well being. In order to quantify the effect that any

condition may have on HRQL, various instruments, both validated and not, have been used. Instruments are of two major types: generic and disease-specific. Generic questionnaires use nonspecific health questions to assess the impact of any disease as compared to normal controls or to compare the impact of unrelated diseases on HRQL. Disease-specific questionnaires use specific questions regarding a disease to assess the impact of that disease on HRQL. Disease-specific instruments are more sensitive in detecting small changes in HRQL related to a given illness because they address areas that are relevant and specific to the disorder. Both types of questionnaires have been used to assess the impact of food allergy on HRQL, and this review will examine results from both types. All studies published since this journal's last general review on this topic [3] are outlined chronologically in Table 1 [5,6,7•–9•,10,11•,12,13,14•,15,16•,17,18,19••, 20•,21•], showing the instruments used and key findings.

Generic instruments

The first study examining HRQL and food allergy was published by Primeau *et al.* in 2000 [22]. This study examined the impact of peanut allergy on HRQL compared to a rheumatologic disease. To measure their outcomes, the researchers used a visual analog scale adapted

from the European Quality of Life Questionnaire to assess the impact of the disease on the patient's quality of life and the Impact of Family Life Questionnaire to assess the impact of the disease on the family. This study found that the parents of peanut-allergic children reported that their children had significantly more disruption in their daily activities, and experienced more disruption in their familial–social interactions, compared with children with rheumatologic disease. This was not the case for peanut-allergic adults, however, who reported less impairment than adults with rheumatologic disease [22].

In 2001, Sicherer *et al.* [23] published a larger trial of children (5–18 years of age) using the Children's Generic Health Questionnaire (CHQ-PF50). Using this questionnaire, one can compare values to established ones for normal controls [24]. This survey was administered to parents of children with food allergies. It showed that parents of food-allergic children had significantly reduced scores (e.g. poorer HRQL) for general health perception, emotional impact on the parent, and limitation on family activities compared with previously established norms. Interestingly, food allergy was associated with higher scores in the measure of family cohesion [23].

Since these first two publications, additional studies have looked at HRQL in food-allergic patients using various instruments. Most recently, Flokstra-de Blok *et al.* [15] examined two generic questionnaires (the CHQ-CF87 in children and the RAND-36 in adults) and compared food-allergic children, adolescents, and adults to the general population in the Netherlands and to patients with asthma, irritable bowel syndrome (IBS), rheumatoid arthritis (RA), and diabetes mellitus. The authors found that the adolescents with food allergy scored lower than the general population on the scales of 'bodily pain' and 'general health' and adult food-allergic patients scored lower on the scales of 'social functioning', 'vitality', and 'general health' when compared with the general population. Both adolescents and adults with food allergy scored lower on many scales when compared with patients with diabetes mellitus, indicating a poorer HRQL, but adults had stronger HRQL scores overall as compared with patients with asthma, RA, and IBS [15]. Two other recent studies [10,16•] used various generic questionnaires to assess the impact of peanut allergy on the quality of life, stress, and anxiety in nut-allergic patients and their families in the UK. The initial study findings suggest mothers of peanut-allergic children had more anxiety and stress than the fathers, and that children with peanut allergy had worse HRQL scores regarding physical health, general quality of life, and greater separation anxiety compared with their siblings [10]. In the follow-up study, Cummings *et al.* [16•] evaluated 41 nut-allergic children (aged 6–16 years) and their mothers, and

Key points

- With the use of generic questionnaires, it is clear that patients with food allergy tend to have a poorer HRQL as compared with normative controls. The limitations and effects are seen throughout the domains of HRQL, including poorer perceived general health, physical health, emotional health, and social health. One theme that continues to appear is the impact on social interaction, especially those centered around meals.
- Disease-specific HRQL instruments for food allergy have now been tested and validated in all age groups. They show that poorer HRQL tends to be associated with a greater number of food allergies, history of anaphylaxis, and the type of food allergy. These have been used across cultures, including studies in the US, Europe, and China. Overall, these studies show that social limitation is a factor for caregivers.
- Validation of disease-specific questionnaires will allow improved and increased research in the field by providing outcome measures for future therapy trials, and for a better quantitation of impairment longitudinally.
- Practitioners should be aware of the effect that food allergy can have on the overall health (physical, emotional/psychological, and social) of their patients, and should take this into account when caring for food-allergic patients. In some cases, referral to a mental health specialist, or use of integrated centers that have a psychiatrist or psychologist on staff, may be appropriate.

found that children with nut allergy had poorer social (81.28 vs. 86.82, $P=0.043$), emotional (71.18 vs. 81.04, $P=0.004$), and psychosocial (75.70 vs. 82.11, $P=0.006$) HRQL scores compared with normative controls. A novel finding in this study was that proper management of the food allergy can affect HRQL, as the anxiety of both the mother and child were lower if the child was prescribed an epinephrine auto-injector [16•].

Disease-specific questionnaires

Disease-specific quality-of-life questionnaires were first used for food allergy in 2003 by Avery *et al.* [25]. The authors compared the HRQL between patients with insulin-dependent diabetes mellitus (IDDM) and patients with peanut allergy. They examined 20 children (7–12 years of age) from each group using two HRQL instruments, one self-designed and one adapted from a vespid allergy questionnaire [26]. The authors found that peanut-allergic children reported lower HRQL as compared with the children with IDDM. Peanut-allergic children had more fear of an adverse event if they were to eat the allergen, more anxiety about eating in general,

Table 1 Published studies on food hypersensitivity and HRQL from 2007–2011

Year, Author, Country	Study Population	Study Purpose	Methods/Instrument	Findings
2007, Marklund <i>et al.</i> , Sweden [5]	17 adolescents (14–18 years old) on exclusion diets due to self-reported food hypersensitivity	To investigate adolescents' experiences of having a food hypersensitivity	Focus-group interviews and one-on-one interviews with some participants	Reported a theme of 'striving to normalize the experience of being food-hypersensitive'
2008, Ostblom <i>et al.</i> , Sweden [6]	Parents of 1378 children (9 years old) taken from a population birth cohort. 212 of the children had reported food hypersensitivity	To examine HRQL of food-allergic (FA) children utilizing a population birth cohort	CHQ-PF28 supplemented with nonvalidated disease-specific questions	Children with food hypersensitivity exhibited significantly lower scores on the subscales physical functioning, general health, and role/social limitations – physical than both children with other atopic conditions and normative controls
2008, DunnGalvin <i>et al.</i> , Ireland and US [7*]	124 Irish and 60 American parents of children (0–12 years old) with physician-diagnosed food allergy completed final instrument	To develop and validate a disease-specific instrument to assess parental perception of HRQL in children with food allergy	FAQLQ-PF validated using FAIM and CHQ-28	Developed a 14–30-item instrument (depending on age) from an original 110-item extended questionnaire that showed good internal and external validity with no differences observed between Irish and US scores
2008, Flokstra-de Blok <i>et al.</i> , the Netherlands [8*]	74 adolescents (12–18 years old) with physician-diagnosed food allergy completed the final instrument	To develop and validate a disease-specific instrument to assess HRQL in adolescents with food allergy	FAQLQ-TF validated using FAIM and CHQ-CF87	Developed a 23-item instrument from an original 166-item extended questionnaire that showed good internal consistency and validity. Was able to discriminate between adolescents who differed in number of food allergies
2009, Flokstra-de Blok <i>et al.</i> , the Netherlands [9*]	115 children (8–12 years old) with physician-diagnosed food allergy completed the final instrument	To develop and validate a disease-specific instrument to assess HRQL in children with food allergy	FAQLQ-CF validated using FAIM and CHQ-CF87	Developed a 24-item instrument from an original 139-item extended questionnaire that showed good internal consistency and validity. Was able to discriminate between children who differed in number of food allergies
2009, King <i>et al.</i> , UK [10]	46 families with a child (8–12 years old) with confirmed peanut allergy	To investigate the impact on HRQL and anxiety reported by a child with peanut allergy and by their immediate family members	HRQL assessed by generic questionnaires (Peds QL or WHOQOL-BREF) and a nonvalidated specific questionnaire; anxiety assessed by SCAS or STAI; stress assessed by PSS-14	Children with food allergy had poorer physical HRQL, HRQL in school, and general HRQL as compared with their siblings. Mothers had higher scores for anxiety and stress than the fathers
2009, Flokstra-de Blok <i>et al.</i> , the Netherlands [11*]	100 adults (≥ 18 years old) with physician-diagnosed food allergy completed the final instrument	To develop and validate a disease-specific instrument to assess HRQL in adults with food allergy	FAQLQ-AF validated using FAIM and RAND-36-item health survey	Developed a 29-item instrument from an original 180-item questionnaire that showed good internal consistency and validity. Was able to discriminate between adults who differed in number of food allergies and in severity of symptoms
2009, Van der Velde <i>et al.</i> , the Netherlands [12]	31 children (8–12 years old), 34 adolescents (13–18 years old), and 36 adults (≥ 18 years old) with physician-diagnosed food allergy	To evaluate the test–retest reliability of the FAQLQ-CF, FAQLQ-TF, and FAQLQ-AF	Age-appropriate FAQLQ instruments were administered to participants on two separate occasions	Each FAQLQ instrument showed excellent test–retest reliability over a short interval
2009, Leung <i>et al.</i> , China [13]	Parents of 197 children (2–7 years old) with self-reported food allergy completed the questionnaire	To assess the validity and utility of the FAQLQ-PB in a Chinese population after translation	FAQLQ-PB translated into Chinese	The FAQLQ-PB showed good internal validity when translated and used in this Chinese population. Impaired HRQL was associated with food allergies to more than 3 foods, current flexural dermatitis, and allergy due to peanut, milk, or egg
2010, MacKenzie <i>et al.</i> , UK [14*]	21 teenagers (13–18 years old) with physician-diagnosed food allergy	To describe the experiences of teenagers with food allergy by open interviews	Open question interviews that were attempted to be participant led	Teenagers tended to describe their food allergy as a way of life, and described various burdensome experiences and coping strategies

2010, Flokstra-de Blok <i>et al.</i> , the Netherlands [15]	79 children (8–12 years old), 74 adolescents (13–18 years old), and 72 adults (≥18 years old) with physician-diagnosed food allergy	To compare scores between FA patients of all ages to the general population and other diseases	Generic HRQL instruments – CHQ-CF87 and RAND-36-item health survey	FA patients scored lower in categories of pain, overall health, vitality, and limitations in social activities than the general public. FA patients had poorer generic HRQL than DM patients, but better than patients with asthma, IBD, and RA
2010, Cummings <i>et al.</i> , UK [16*]	41 patients (6–16 years) with physician-diagnosed nut allergy as well as their mothers completed questionnaires	To assess the impact of nut allergy on HRQL and anxiety in children and their mothers with nut allergy	HRQL assessed by generic questionnaires (Peds QL or WHOQOL-BREF) and FAQL-PB; anxiety assessed by SCAS or STAI; stress assessed by PSS-14	Patients had poorer emotional, social, and psychological HRQL compared with normative data. Maternal and patient anxiety was lower in those patients who had been prescribed an epinephrine auto-injector, but was not affected by severity of past reactions
2010, Flokstra-de Blok <i>et al.</i> , the Netherlands [17]	79 children (8–12 years old), 74 adolescents (13–18 years old), and 72 adults (≥18 years old) with physician-diagnosed food allergy	To compare HRQL as measured by generic and disease-specific questionnaires in the same group of food allergic patients	Disease-specific instruments: FAQLQ-CF, FAQLQ-TF, and FAQLQ-AF; generic instruments: CHQ-CF87 and RAND-36	Disease-specific instruments had minimal floor and ceiling effects, but the generic instruments showed high ceiling effects. There was low agreement between the two types of instruments in identifying the patients with the lowest HRQL
2010, DunnGalvin <i>et al.</i> , Ireland [18]	Parents of 82 children (0–12 years) with physician-diagnosed food allergy completed questionnaires before and after oral food challenge	To determine the ability of the FAQLQ-PF to perform longitudinally in a sample of children undergoing food challenge	FAQLQ-PF FAIM (for validation)	The FAQLQ-PF detected changes post challenge at the 6-month time point and showed differences between passed and failed challenges. Authors concluded FAQLQ-PF could be used longitudinally to assess effectiveness of clinical trials or interventions
2010, Lieberman <i>et al.</i> , USA [19**]	324 parents of children (<18 years old) and 54 adults (≥18 years old) with reported food allergy answered surveys	To determine the presence and characteristics of bullying, teasing, or harassment of FA patients owing to their food allergies	Nonvalidated novel questionnaire	Reported bullying was common in this population with 24% of respondents reporting bullying due to patient's food allergy. Acts (both physical and nonphysical) were typically done at school by classmates and those harassed commonly reported deleterious emotional or psychological effects
2010, Springston <i>et al.</i> , USA [20*]	1126 caregivers of children (0–17 years old) with reported food allergy responded to questionnaire	To better understand the impact of caring for FA patients on the HRQL of the caregiver	FAQL-PB	Nation-wide survey showed social limitations for the caregiver to be the most consistent burden. Poorer HRQL was associated with multiple food allergies, history of ER visit in the past year, and allergy to specific foods
2010, Resnick <i>et al.</i> , USA [21*]	203 teenagers (13–19 years old) completed final questionnaire	To develop and validate a disease-specific instrument to assess HRQL in teenagers with food allergy	FAQL-teen	Developed a 17-item instrument from an original 88-item extended questionnaire that showed good internal validity. Was able to discriminate by disease severity (between teenagers with and without a history of anaphylaxis)

CHQ-CF87, Child Health Questionnaire-Child Form87; CHQ-PF28, Child Health Questionnaire-Parent Form28; DM, diabetes mellitus; FAQL-PB, Food Allergy Quality of Life Questionnaire-Parent Form; FAQLQ-CF, Food Allergy Quality of Life Questionnaire-Child Form; FAIM, Food Allergy Independent Measure; FAQLQ-PF, Food Allergy Quality of Life Questionnaire-Parent Form; FAQLQ-TF, Food Allergy Quality of Life Questionnaire-Teen Form; HRQL, Health-related quality of life; IBD, inflammatory bowel disease; PedsQL, Pediatric Quality of Life Inventory 4.0; PSS-14, Perceived Stress Scale-14; RA, rheumatoid arthritis; SCAS, Spence Child Anxiety Scale; STAI, State-Trait Anxiety Inventory; WHOQOL-BREF, World Health Organization Quality of Life-Brief Scale. For studies prior to 2006, please refer to previous review in this journal [3].

and were more restricted in their physical activities [25]. Whereas these instruments were disease-specific, they were not validated for food allergy, and it is clear that comparing different diseases with disease-specific questions is a potential pitfall. Due to these limitations, progress in the field over the past 5 years has led to multiple studies examining disease-specific instruments, and now there are validated questionnaires available.

Cohen *et al.* [27] published the first validating study for a food allergy disease-specific HRQL instrument in 2004. This study measured parental burden associated with having a child with food allergy, resulting in an instrument termed The Food Allergy Quality of Life-Parental Burden (FAQL-PB). Findings in the study suggested that food allergy affects family and social activities (vacation, social events, child care, etc.), school, emotional issues, and time for meal preparation. The questionnaire showed good internal validity and correlation with domains of the already validated generic CHQ-PF50 [27]. Since publication of this first, validated, and disease-specific instrument for food allergy, many studies have published other versions of validated questionnaires. Only those published since 2007 will be discussed here (summarized in Table 1) as prior studies have been reviewed in this journal [3,4**].

Food Allergy Quality Of Life-Parental Burden and teen instrument (US)

Since publication in 2004, the FAQL-PB has been used in two further studies [13,20*]. Leung *et al.* [13] examined the test's performance in a Chinese population of children 2–7 years of age with parent-reported adverse food reactions, and found the validity crossed over after translating the questionnaire in their Chinese population. In this patient population, impaired HRQL was associated with patients having more than three food allergies, current food avoidance, and past reactions to egg, peanut, and milk [13]. A recent large-scale study [20*] done in the US used the FAQL-PB to examine the impact of food allergy on caregiver quality of life for 1126 caregivers. This study showed that the major concern for caregivers is related to social limitations due to the child's food allergy. In this cohort, poorer HRQL scores were found among caregivers that felt more knowledgeable about food allergy, among caregivers whose children visited the emergency department due to food allergy in the prior year, and among caregivers whose children had multiple food allergies or allergy to egg, milk, or wheat [20*]. The difference in foods associated with poorer HRQL scores is likely due to how much that food is integrated in that culture's diet. Recently, Resnick *et al.* [21*] sought to validate another questionnaire in a teenage population. This questionnaire was designed and validated to examine HRQL in adolescents (aged 13–19) in the USA, and was thus termed the FAQL-teen. The authors

established a 17-item instrument from an original 88-item impact-assessment questionnaire. The FAQL-teen showed excellent intrinsic and cross-sectional validity, and showed that for these adolescents, social limitation was one of the most troubling areas [21*].

Food Allergy Quality Of Life Questionnaires (the Netherlands, Ireland)

Starting in 2008, various studies performed in Ireland and the Netherlands have sought to develop and validate instruments to measure food allergy-specific HRQL in various age groups [7*–9*,11*,17,18]. Whereas each instrument is unique and designed for a particular age group, they all share a common name, the Food Allergy Quality of Life Questionnaire (FAQLQ). The first study to validate one of these FAQLQ instruments studied parents of food-allergic children, and the instrument designed for this study was therefore called the FAQLQ-Parent Form (FAQLQ-PF). Unlike the FAQL-PB, which looked at parental burden, the FAQLQ-PF was designed to question the parent about the impact of food allergy on the child, or as the authors describe, from the child's perspective. This study systematically developed and tested the FAQLQ-PF in children aged 0–12 years of age, showing the questionnaire's reliability and internal and external validity. It also identified three domains or subscales that accounted for the majority of variance: emotional impact, food anxiety, and social and dietary limitations [7*]. Since that publication, a series of instruments using the FAQLQ title have been rigorously designed, tested, and validated in children aged 8–12 years with a child form (FAQLQ-CF), teenagers aged 13–17 years with a teenager form (FAQLQ-TF), and in adults over the age of 17 years with an adult form (FAQLQ-AF) [8*,9*,11*]. These three instruments, the FAQLQ-CF, FAQLQ-TF, and FAQLQ-AF, have since been compared to generic questionnaires in the same food-allergic patient groups [17]. The authors found that the generic questionnaires in this study had very high ceiling effects (large percentage of patients that had the highest scores, that is, had no impairment based on the selected questions), suggesting that many food-allergic patients had no problems in certain domains of the questionnaire. This is to be expected, as the generic questionnaires may ask questions that do not pertain to food-allergic patients. The disease-specific questionnaires, however, had no significant floor or ceiling effects, which would possibly make them good candidates for longitudinal as well as cross-sectional studies. With internal validation established, the group has since published a longitudinal validity study of the FAQLQ-PF in parents of children 0–12 years of age that had either passed or failed an oral food challenge. The authors found that the FAQLQ-PF was sensitive to change, confirming a change in value of 0.5 points to be a meaningful change in the HRQL score [18]. This longitudinal study may allow practitioners to have a validated instrument to measure

HRQL that can be used over time as a means of assessing HRQL response to clinical interventions.

Other forms of assessment and miscellaneous studies

Whereas questionnaires and surveys are integral in assessing HRQL, they do not allow full elucidation of thoughts and feelings of the participants. For this, interviews are required. MacKenzie *et al.* [14[•]] recently published their experience of interviews with 21 teenagers (13–18 years of age) with food allergy. This study elucidates how food allergy becomes a ‘way of life’ for many teenagers and describes various coping strategies and burdens perceived by the teenagers. For example, going to events affected all of the teenagers, yet in a variety of different ways as evidenced by the following three responses from three different teenagers:

‘It kind of annoys me when I go to barbecues . . . because it’s a bit embarrassing going to your friend’s barbecue . . . and bringing your own buns’ (male 13 years old).

‘I’ve missed out on 4 parties because I just don’t want to go. I didn’t want the aggravation of the food because they don’t understand my nut allergy. So I missed out because I just didn’t want the hassle at all.’ (female 13 years old).

‘It makes me more conscious of trying to be safe and trying to be prepared. But it doesn’t stop me doing things . . . It makes me apprehensive about going out for meals and doing the odd thing, but it doesn’t stop me doing what I want to do.’ (female 18 years old) [14[•]].

The study showed some similarities to a previous study of adolescents in the US with food allergy [28]. In this study, 90-min focus groups led to a 42-item questionnaire, which showed that adolescents had more concern over food allergy than they did about dating or about peer pressure, and that having this life-threatening food allergy caused them to be ‘cautious, alert, limited, frustrated, vulnerable, and responsible’. More insights may provide practitioners with a better understanding of the personal experiences of food-allergic patients, rather than simply a score about the effect on quality of life.

All of the above mentioned studies have described effects of food allergy on quality of life simply as a consequence of having the condition. However, various studies in the US have suggested that food-allergic patients may be subjected to abuse by peers and others due to their food allergies, which would add another external cause for impaired HRQL [29]. In response to these concerns, we undertook a pilot study to characterize bullying of

food-allergic patients [19^{••}]. Parents of food-allergic children or food-allergic teens and adults completed surveys regarding occurrence of bullying, teasing, or harassment due to food allergy. Of the 353 qualifying respondents, 85 (24.1%) respondents reported that the food-allergic individual had been bullied, teased, or harassed due to food allergies. It is of interest to note that this percentage of reported bullying is higher than that reported in the general population of children aged 11–16 in the US (17%) [30], although direct comparison of these percentages must be done with caution as this study was only a pilot study and was not designed to determine the true prevalence. The events described in our study typically took place at school, and perpetrators of the events were typically classmates, but also included siblings and school staff. Nonphysical acts, such as verbal teasing and taunting, were more common than physical acts; however, many reported having the allergen thrown at them or having their food purposely contaminated with an allergen. The majority of respondents described some form of psychological or emotional distress in their children due to the events, reporting feeling sad, depressed, or embarrassed. Whereas this study’s limitations (the majority of respondents were parents and not the children and it is not a validated questionnaire) make it impossible to accurately assess the prevalence and effects of bullying on food-allergic individuals, it reveals a burden that deserves the recognition of any practitioner caring for food-allergic patients.

Finally, one study has examined the affect food allergy may have on psychological health by looking at associations of food allergy and axis I disorders [31]. In this study from Canada, authors found that mood and anxiety disorders (major depressive disorder, panic disorder, and bipolar disorder) were more commonly seen in patients with self-reported food allergy as compared with the community population. This study merely shows association without evidence of causation. This observation though, combined with data from numerous studies showing affects that food allergies can have on stress and anxiety [5,10,14[•],16[•],22,28], suggest that physicians caring for patients with food allergy should be cognizant of the fact that some patients may benefit from evaluation by a mental health professional. In fact, one study [32] has shown data that suggest that group intervention can have a positive effect, at least on coping strategies for parents as well as the perceived burden that food allergy can cause a family.

Conclusion

In the past 10 years, increasing research has shown that having a diagnosis of food allergy is associated with a negative impact on HRQL. With the advent of newly validated instruments that can reliably measure HRQL in

all age groups, practitioners and researchers now have a means of assessing the impact the diagnosis carries and how treatments can affect a patient's life beyond physical health. This is likely to become vital in future treatment studies as a way of assessing outcomes, much as in the way HRQL is used for asthma and rhinitis trials.

In addition, the burden on HRQL allows a better global understanding on the importance of this disease in the patient's day-to-day life, and must be taken into account when caring for these patients. Until therapy for food allergy is available, practitioners must help their patients to cope with the effects of this condition and use an integrated approach, perhaps with the help of professional psychologist or psychiatrists, to caring for their patients.

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References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 272).

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