

## Case Report

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# An innovative mindfulness and educational care approach in an adult patient affected by gastroesophageal reflux: the IARA model

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### Abstract:

Patients affected by gastroesophageal reflux disease (GERD) have a poor quality of life caused by several manifestations such as cough, asthma, laryngitis and dental erosion. The clinical conditions are highly disabling for patients and symptoms are difficult to manage. These conditions lead to many discomforts which contribute to an increase of the disease perception. For these reasons, it is important to improve the interventions on psychological aspects that ameliorate the patients' quality of life. The application of IARA model has proven useful to decrease GERD symptoms, distress and medication intake and to increase adherence to care, improving the patient's quality of life.

**Keywords:** gastroesophageal reflux disease (GERD), health education, IARA, mindfulness, psychosynthesis

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## Introduction

Gastroesophageal reflux disease (GERD) is a frequently encountered disorder caused by the reflux of gastric contents into the oesophagus, leading to oesophageal mucosa damage or reflux-associated symptoms [1, 2].

In addition to chest discomfort directly related to acid irritation of the oesophagus, GERD symptoms may include extraoesophageal manifestations such as cough, asthma, laryngitis and dental erosion [3]. Patients with GERD not satisfied with acid suppression therapy could also have psychological and social problems. In particular, the effect of distress exacerbated GERD symptom severity and perception. Despite several studies [2], a number of uncertainties surround its aetiology, particularly with symptom perception. Evidence suggests that psychological and social influences, such as stress or stress-related personality characteristics, may play an important role in the presentation, diagnosis and treatment of GERD [4].

The present case is of importance in view of the involvement of innovative psychological approach named "IARA model," an Italian acronym which means *Incontro, Alleanza, Responsabilità, Autonomia* (Meeting, Compliance, Responsibility, Autonomy) already used on chronic tension-type headache [5].

IARA is a mindfulness approach which adds to the education on disease and breathing the guided imagery (GI, see Table 1) and the concomitant use of drawing to improve illness awareness.

**Table 1:** The "love and light breath" exercise.

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– Let's put ourselves in a comfortable position, let's pay attention to what's happening within ourselves through our breathing, let's connect us with our breath rhythm without speeding it up or slowing it down.

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- While breathing, let's imagine to carry within us a breath of fresh, harmonious, loving and bright air. With the air coming out, leave all those things that are no longer useful in this very moment.
- Through our breath let's get in contact with our physical body, bringing the bright and loving air to the bottom of the body touching our feet, legs and pelvis. Let's imagine our cells feeding on that fresh, bright and loving air, freeing themselves from what they have accumulated. With the air coming out, leave all those things that are no longer useful now.
- Let's continue keeping in touch with our breath the neck and the face with all our senses, the head, the brain and let's imagine that our cells are nourishing their selves of fresh, bright and loving air; in this way our cells can be free from what they have accumulated. With the air coming out, leave all those things that are no longer useful now.
- Let's get in touch with our emotional part, let's imagine a calm and clear lake, reflecting the surrounding landscape illuminated by a radiant sun.
- Let's imagine a fresh, bright and loving air blow stirring our emotions and, with the air coming out, let's imagine all those emotions that are no longer useful leaving us.
- Through our breath again, let's get in touch with our mental level, let's imagine a room with windows. Let's open these windows and let a bright and loving air enter, running through our thoughts. From the windows, we can see the air going out making us free from those thoughts that are no longer useful, creating a new space that allows us to have new thoughts, and new insights.
- With the breath let's move ourselves to the centre of our heart, where we can imagine to switch on a light. Let's move this light such as a lighthouse or lamp to the body area asking it for help and care.
- We can see that the entire digestive tract lights up: the mouth, the oesophagus, the cardia, the stomach, the pylorus and the intestine till the rectum.
- Let's imagine some little men leaving from the heart centre, as a group, with a joyful attitude, as quiet and cooperating workers that are going along the lighted way. We can see that these men are divided into subgroups and are distributed in various areas: in the mouth, down the oesophagus, arriving at the first valve where some little men keep it closed after the passage of food or liquid. Other men take care of the stomach distributing along its entire length and width, helping the food to go down its way. Other men are positioned on the pylorus and are ready to open it to allow food and liquid to flow into the intestine emptying and freeing the stomach.
- Let's remain a moment for observation and look at what is happening, how they work, if we receive images, feelings, thoughts, insights that are useful for this particular moment. Let's continue breathing emitting light and loving air that facilitate the men's work. With the air coming out letting what is no longer useful for now go.
- When we see the men finish their task, always breathing, we can see them retiring and move towards the centre of the heart bunching up the initial group with a joyful, cooperative and compassionate attitude. Through our breath let's imagine to spread the gratitude to our physical, emotional and mental levels, in order to be grateful for the experience that we have lived and for them taking care of us. With the air coming out, leave all those things that are no longer useful now. Let's bring the attention to the present, let's get in touch with the outside world and bring the attention to the awareness. Let's start to move our hands, our feet and, when we are ready, open our eyes.

IARA is based on Assagioli psychosynthesis, which is a psychological theory for the conscious attempt of the humans to cooperate with the natural process of personal development, also through practical techniques such as meditation, GI and the use of evocative words [6].

IARA is also based on transpersonal states explained by Grof as "[...] *the feeling of the individual that his consciousness expanded beyond the usual ego boundaries and the limitations of time and space*" [7]. Spiritual approach is considered "*a second generation of mindfulness-based interventions*" because it takes account of the whole person [8], including the natural tendency to the transcendent, not necessarily meant as a religious concept [9].

Indeed, neurosciences have also described how the brain works in mindfulness states and in transcendental experiences [10].

Finally, IARA leads the patient, through the educational care, to a state of autonomy in order to deal with his/her own situation and to give a different meaning to the illness experience, it allows to achieve an improved self-awareness and knowledge of the therapy, improving an active and responsible participation in the care process.

## Case presentation

A 55-year-old male patient affected by GERD was treated for 3 years with 30 mg Lansoprazole once a day before breakfast and a Magaldrate-Oral teaspoon three times a day after meals. The diagnosis was suspected in September 2014 by a general practitioner (GP). The patient was referred to a gastroenterologist, and the diagnosis was confirmed by esophagogastroduodenoscopy which reported low oesophageal sphincter incompetence with hyperemia of the lower third of the oesophagus. The patient reported heartburn and sternal pain and described "*a lump in his throat.*" Moreover, he reported he was suffering from job-related stress and general tension. He also said he regretted spending little time with his family, which was a cause of sorrow, fatigue and insomnia.

## Investigation

In order to monitor GERD during the IARA study, we used the EsaoteMyLab™ 25 Gold ultrasound with Variable-Band Convex Array. The ultrasound was conducted by a radiologist expert in echographic images to highlight sphincter dysfunction. The medical doctor was the same in pre- and post-ultrasound. In particular, in this type of investigation, the patient is monitored throughout ultrasound imaging whilst eating yoghurt at the appropriate density. This study was chosen in order to minimize the stress in the patient, since esophagogastroduodenoscopy revealed he suffered from reflux. To assess the quality of life of the population with specific chronic diseases [11], we used the Italian Short-Form Health Survey (SF-36). This study received ethics approval by the Ethics Committee of the eCampus University.

## Treatment

The patient attended the medical outpatient department, following the GP advice who had already prescribed an ultrasound investigation (from now on ultrasound) and proposed the attendance to the IARA model; the patient gave his informed consent. Before the ultrasound, a nurse with a master's degree in Psychology (from now on nurse) explained the main characteristics of the IARA model four meetings/appointments and introduced the patient to an internet-based copy of the SF-36.

The first appointment with the nurse took place 1 week after the ultrasound.

The meeting consisted of three steps each time asking the patient:

- what he understood about the symptoms
- to draw the symptoms
- to observe the illustration and share his perception

The main purpose was to raise body and disease patient awareness through drawing. To this end, the nurse provided the patient with a blank sheet of paper and a box of 12 coloured pencils, asking them to draw what they knew about his gastrointestinal tract. He was asked to highlight the parts that he considered 'healthy' and to attempt to give an anatomical description. The nurse assisted this process by providing anatomical, physiological and pathophysiological education on the gastrointestinal tract. The explanation was focused on the role of the cardia with the aid of visual anatomical descriptions. The patient was then asked to write down seven personal qualities by choosing evocative words [6, 12]. According to the fundamentals of the evocative words, the patient was invited to choose seven personal qualities, selecting two of them. Then, the patient was encouraged to reflect on these two qualities during the rehabilitation process.

The patient was then asked if he was willing to attempt a GI designed for the treatment of his pathology, called "*Love and light breath*" (Box 1).

Briefly, according to IARA model [13], the GI is structured into two parts: the first is a preparatory phase for aligning the physical, mental and emotional layers by means of specific visualizations and terms; the second is a proper creative moment where the image of "*The little men at work*" is introduced. These types of images favour a playful and relaxing attitude while performing the exercise and encourage the process of misidentification between the patient and his illness.

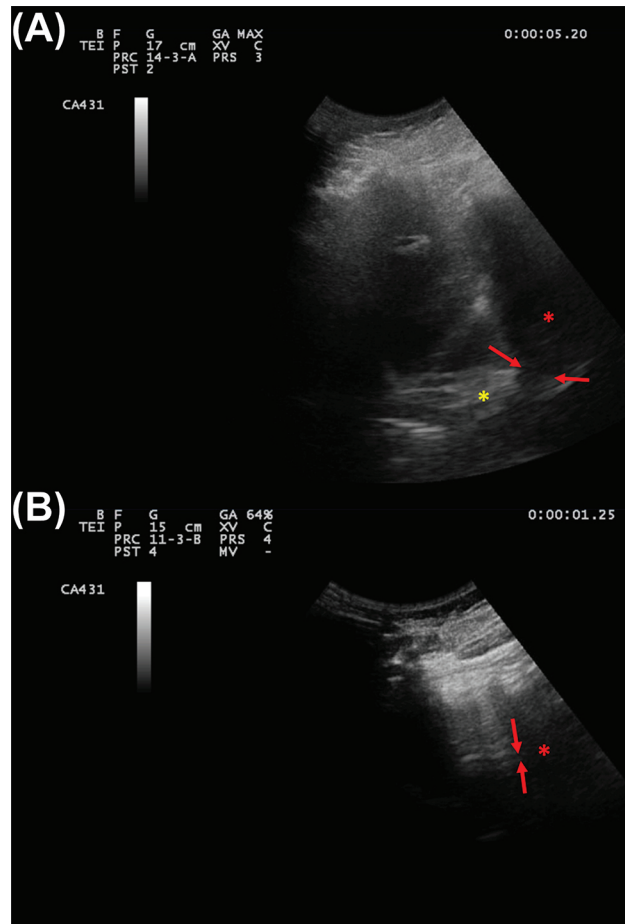
The nurse provided an overview of the exercise and enquired if the images used for the exercise gave discomfort to the patient. Since the patient had no difficulties with this aspect, the nurse started the GI. At the end of the exercise, the patient was asked to share their emotions and thoughts describing the images visualized. Finally, the patient was invited to repeat the exercises daily at home.

The second appointment took place 15 days after the first one. The nurse enquired about his time at home, if it had been difficult to do the exercise alone, if it led to any previously unreported emotion or mental images. The nurse invited the patient to repeat the exercise with her assistance. The patient shared his emotions and thoughts while describing the visualized images. At the end of the meeting, the patient was once again asked to repeat the exercises at home. At the third appointment (took place 30 days after the first one), the patient was invited to repeat the GI. Furthermore, he was invited to reflect again on his personal qualities.

At the final appointment (took place 60 days after the first one), the patient proved to be able to perform the GI exercise autonomously. He performed the "*Love and light breath*" exercise at home on a daily basis. Finally, the patient was asked to fill in the SF-36 and an ultrasound was carried out.

## Results

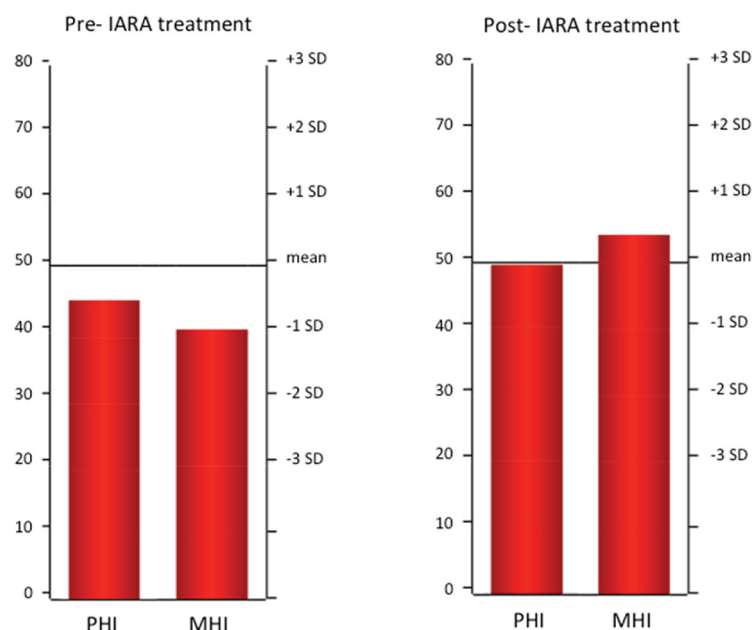
After receipt of informed consent for the IARA model experimentation in October 2014, the first ultrasound took place. The pre-treatment ultrasound, confirming the esophagogastroduodenoscopy, detected the presence of many refluxes that the patient reported in the epigastric region and in the neck (Figure 1A shows the presence of reflux; yellow asterisk). The post-treatment ultrasound was conducted in April 2015, and it can be seen in Figure 1B that reflux is not detected anymore. Moreover, according to his GP, the patient had stopped medication 20 days before the second ultrasound.



**Figure 1:** Ultrasound investigation images.

(A) Pre-IARA treatment: the gastroesophageal reflux through the oesophagus is highlighted by a yellow asterisk; red arrows represent the limits of the cardia; red asterisk represents the stomach. (B) Post-IARA treatment: red asterisk represents the stomach; red arrows highlight the closed cardia and the absence of the gastroesophageal reflux.

The SF-36 (maximum score of 100, see Figure 2) showed a value increase in physical activity (from 75 to 85); overall health (from 47 to 67); vitality (from 40 to 70); social activity (from 75 to 85) and mental health (from 44 to 72). As we can observe in Figure 2, the mental and physical activity health indicators vary between pre- and post-treatment. In particular, the mental health index exceeds the Italian national average (data and figure obtained from Mario Negri Institute in October 2014 and in April 2015, the same day of ultrasound): <http://crc.marionegri.it/sf36/sf36v1ita.htm>



**Figure 2:** Statistical analysis of the SF-36 questionnaire pre- and post-IARA treatment.

PHI, Physical Health Index; MHI, Mental Health Index. The values of the PHI and MHI scores are lower than the Italian population average ones before IARA treatment, while the situation is reversed after treatment (PHI in the average, and higher-than-average MHI score). The analysis highlights a considerable increase in the MHI score.

The patient said to have achieved a better management of his activity of daily life. The bodyweight and the Body Mass Index (BMI) did not particularly change during this pathway. The height patient is 1.82 m, and before IARA treatment the patient's weight was 82 kg, whereas today it is 84 kg.

In October 2016, a 1-year follow-up from the beginning of IARA treatment, the GP confirmed that no medication has been taken for GERD treatment, even when the patient states that the causes of his distress are still present.

## Discussion

The autonomic nervous system (ANS) controls body homeostasis. Although it is still highly debated, it is possible to hypothesize that the ANS imbalance due to stress can cause many diseases, such as dyspepsia, irritable bowel syndrome and inflammatory bowel disease [14, 15]. Furthermore, ANS imbalance and stress responses have been associated with several psychosomatic disorders [16].

Pellissier and co-workers have shown [17] that these diseases can result from a dysfunctional relationship between the ANS and the hypothalamic–pituitary–adrenal axis. The imbalance between these components is often due to an imbalance between prefrontal cortex and the amygdala that, in turn, innervates the dense network of the neuroendocrine and the ANS [18]. Literature has demonstrated that mindfulness techniques decrease distress, modifying the amygdala structure [19]; in this way, these techniques can regulate the relationship between ANS and cortical components, with psychophysiological effects [20]. Mindfulness practices increase the awareness of your own emotional and body state [21, 22]. According to that, Hsu and co-workers [23] have discussed that the GERD treatment passes also through the awareness of our personal disease. In fact, it has been demonstrated [23] that people affected by GERD have an impaired perception of the gastroesophageal tract. It is also known that mindfulness and educational [24] interventions raise awareness of the enteroceptive signals coming from the body [21] and reduce anxiety, chronic migraine, distress and even depression [25, 26].

Furthermore, according to Bandura [27], the patient's self-efficacy is very important throughout the care process. It is known that patient's self-efficacy increases the motivation, perseverance, thought patterns, course of action, emotional response and attribution of accomplishment and failure.

IARA model stimulates the patient to think about his qualities, turning them into evocative words according to psychosynthesis [6]. These qualities, which often are not aware, lead to a conscious involvement in the care process. Indeed, according to psychological laws, all words possess the power of stimulating and raising the activity associated to them [12]. The patient has demonstrated a good compliance to pharmacological therapy, but thanks to the use of IARA, according to the GP, he was confident to stop the therapy and use the GI everyday.

Moreover, thanks to the illustration technique and education on illness, the patient achieved a better awareness about the gastrointestinal tract anatomy.

Improving illness awareness, drawing and GI techniques giving a better knowledge of body signals. [28]. The “*men used*” during imagination in IARA help to shift the attention from mind to the body [19].

As aforementioned, it has been demonstrated that this mind–body shift increases the enteroceptive awareness [21, 22]. Also, in our case, the patient has achieved a better body awareness, allowing him to control illness symptoms.

According to ultrasonography and the SF-36 results, we are encouraged to think that the IARA model may serve as a new and innovative mindfulness and educational care-based technique useful for GERD. Indeed, IARA was useful to decrease GERD symptoms and increase body awareness and adherence to care, thus improving quality of life and reducing distress for this patient. It is important to be aware that the discussion proposed is based on one subject experience. However, these encouraging results make us feel confident in IARA efficacy for a future extension of the sample.

## Limitations of the study

To date, no gold standard exists for the diagnosis of GERD (see, for review, Nikaki et al., 2016). The method used to diagnose GERD in the patient considered (i. e. esophagogastroduodenoscopy) is in line with the fact that the patient already experienced highly specific symptoms of GERD which responded to the treatment used (see case presentation). To monitor the course of GERD in this patient, we decided to use the ultrasound (with the use of a specific yoghurt solution which allowed to better highlight any reflux events) because esophagogastroduodenoscopy is considered an invasive test.

Ultrasound can still provide information not obtainable by other methods. For example, it allows you to show the entry of gastric material in the oesophagus, to calculate the length of the abdominal distal oesophagus, the position of the lower oesophageal sphincter to the diaphragm and the angle of HIS and also to identify the presence of non-acid reflux. Information is rapidly obtained without significant suffering of the subject.

The limitations of the method are the relatively short duration and high sensitivity but a low specificity in diagnosing GERD which, however, in our case, was also assessed through clinical history of the subject and by esophagogastroduodenoscopy.

Furthermore, as demonstrated by Mádi-Szabó and Kocsis (2000), ultrasound can be a useful instrument to monitor a special form of gastroesophageal reflux, which is, a slow, trickling form. In their study, the authors state that this type of reflux observed can be the cause of GERD, by specifying that this special trickling form was observed only in GERD patients. Our case report demonstrated the efficacy of the educational model in reducing stressful components associated with GERD. Finally, the psychological result is encouraging (see Figure 2). Therefore, an increase of the sample, further investigations and other objective measurements are needed to confirm the efficacy of this treatment to improve the quality of life of people with GERD.

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