Fibromyalgia syndrome (FM) is a chronic, generalised pain condition usually accompanied by several associated symptoms, such as fatigue, sleep disturbance, headache, irritable bowel syndrome and mood disorders. Different medical treatments are used to treat fibromyalgia and the recent guidelines suggest that the optimal treatment consists in a multidisciplinary approach with a combination of pharmacological and non-pharmacological treatment modalities. Among non-pharmacological treatment, nutrition is a promising tool for FM patients. The aim of this review is to update the present knowledge about fibromyalgia and nutrition by means of a systematic search performed on Medline from January 2000 to December 2014. Nutritional deficiencies have been described in FM patients and the benefits of specific diet and nutritional supplementation are shown. Obesity and overweight, often present in FM patients, are related to the severity of FM worsening the quality of life in terms of higher pain, fatigue, worsened sleep quality and higher incidence of mood disorders. Weight control is thus an effective tool to improve the symptoms. Moreover, it seems reasonable to eliminate some foods from the diet of FM patients, for example excitotoxins. Non-coeliac gluten sensitivity is increasingly recognised as a frequent condition with similar manifestations which overlap with those of FM. The elimination of gluten from the diet of FM patients is recently becoming a potential dietary intervention for clinical improvement. In summary, this review reveals the potential benefit of specific dietary interventions as non-pharmacological tools as part of a multidisciplinary treatment for FM patients.