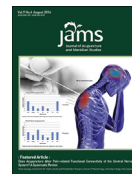


Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

Journal of Acupuncture and Meridian Studies

journal homepage: [www.jams-kpi.com](http://www.jams-kpi.com)

## Research Article

# Patterns of Energy Imbalance of the Meridians in Patients with Temporomandibular Dysfunction

Vera L. Rasera Zotelli <sup>1,\*</sup>, Cássia M. Grillo <sup>1,†</sup>,  
 Maria L. Bressiani Gil <sup>1,†</sup>, Ronaldo S. Wada <sup>1,†</sup>, Jorge E. Sato <sup>2,‡</sup>,  
 Maria da Luz R. de Sousa <sup>1,†</sup>

<sup>1</sup> Department of Social Dentistry of the Piracicaba Dental School, State University of Campinas, Av. Limeira, 901 – Areão, CEP: 13414-903, Piracicaba, São Paulo, Brazil

<sup>2</sup> Brazilian Medical College of Acupuncture, Rua Itapeva, 574, CJ. 71 A, Bela Vista, CEP: 01332-000, São Paulo, SP, Brazil

Available online ■ ■ ■

Received: Nov 8, 2017  
 Accepted: Nov 10, 2017

**KEYWORDS**

acupuncture points;  
 dentistry;  
 meridians;  
 temporomandibular  
 joint;  
 temporomandibular  
 joint disorders

**Abstract**

Temporomandibular dysfunction (TMD) is a set of changes that affects the muscles of mastication, temporomandibular joint, teeth, and associated periodontal and orofacial structures. According to Traditional Chinese Medicine, the imbalance of energy (Qi) circulating in the acupuncture meridians is always the primary etiologic cause of any physical manifestation. The aim of this study was to describe the patterns of Qi imbalance in patients with TMD by means of an objective measurement. The clinical study was conducted at the Piracicaba Dental School (FOP/Unicamp), in Piracicaba-SP, Brazil. We evaluated 40 adult volunteers with TMD. The Qi measurement was carried out by the researcher using the Ryodoraku method using 24 points representing the 12 acupuncture meridians: LU9 (Taiyuan), PC7 (Daling), HT7 (Shemen), SI5 (Yanggu), TE4 (Yangchi), LI5 (Yangxi), SP3 (Taibai), LR3 (Taichong), KI3 (Taixi), BL64 (Jinggu), GB40 (Qixu), and ST42 (Chongyang). The average total Qi of 40 volunteers ( $21.7 \mu\text{A} \pm 1.5$ ), was below the normal range (40–60  $\mu\text{A}$ ) and was classified as deficiency of Qi (empty). The coupled meridians that showed the highest Qi imbalance were the kidney ( $29.4 \mu\text{A} \pm 2.8$ ) and bladder ( $13.8 \mu\text{A} \pm 1$ ). The

\* Corresponding author. Community Dentistry Department, Piracicaba Dental School – University of Campinas, Av. Limeira, 901 – Areão, CEP: 13414-903, Piracicaba, Sao Paulo, Brazil.

E-mail: [vera.rasera@hotmail.com](mailto:vera.rasera@hotmail.com) (V.L. Rasera Zotelli), [gricag@hotmail.com](mailto:gricag@hotmail.com) (C.M. Grillo), [lubressiani@ig.com.br](mailto:lubressiani@ig.com.br) (M.L. Bressiani Gil), [ronaldoswada@gmail.com](mailto:ronaldoswada@gmail.com) (R.S. Wada), [satoclin@yahoo.com.br](mailto:satoclin@yahoo.com.br) (J.E. Sato), [luzsousa@fop.unicamp.br](mailto:luzsousa@fop.unicamp.br) (M.L.R. de Sousa).

† Contact address: Community Dentistry Department, Piracicaba Dental School – University of Campinas. Av. Limeira, 901 – Areão CEP: 13414-903 – Piracicaba, Sao Paulo, Brazil.

‡ Contact address: Rua Fiação da Saúde, 145- Cj 26 – Vila da Saúde CEP: 04144-020 – São Paulo, SP, Brazil.

pISSN 2005-2901 eISSN 2093-8152

<https://doi.org/10.1016/j.jams.2017.11.002>

© 2017 Medical Association of Pharmacopuncture Institute, Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Rasera Zotelli VL, et al., Patterns of Energy Imbalance of the Meridians in Patients with Temporomandibular Dysfunction, Journal of Acupuncture and Meridian Studies (2017), <https://doi.org/10.1016/j.jams.2017.11.002>

Qi planes with greatest imbalance were the Shao Yang and Shao Yin. In conclusion, volunteers with TMD presented a pattern of Qi deficiency, and the most prevalent imbalance patterns identified were in the kidney and bladder coupled meridians and in the energetic planes Shao Yin (heart/kidney) and Shao Yang (triple energizer/gall bladder).

## 1. Introduction

The temporomandibular joint (TMJ), as well as other joints of the human body, is vulnerable to both extrinsic and intrinsic influences, as well as age-dependent changes. This vulnerability can be expressed as intermittent or continuous pain in various parts of the head and neck [1]. Temporomandibular dysfunction (TMD) is a set of changes that affect the chewing muscles, the TMJ, teeth, and the periodontal- and orofacial-associated structures. The etiology is multifactorial; inflammatory and infectious disorders, trauma, and hormonal changes have been cited causes of TMD, and it is frequently associated with parafunctional habits and psychosocial disorders [2]. The symptoms commonly associated with TMD include TMJ pain, generalized orofacial pain, chronic headaches and earaches, jaw dysfunction, including hyper and hypomobility, limited movement or locking of the jaw, painful clicks or noises at the opening or closing of the mouth, and difficulty to chew or to talk [3]. Due to the multifactorial etiology and the self-limiting nature of TMDs and because of the effectiveness of noninvasive therapies, their use has been recommended as initial therapies for patients suffering from TMD [4].

Traditional Chinese Medicine (TCM), of which acupuncture forms part, is based on the principle that there is an immaterial and invisible substance, which we call energy (Qi) that circulates through channels or meridians. Qi imbalance is always the primary etiological cause of any physical manifestation. In TCM, the disease has no name; it is a state of imbalance that can manifest itself as Qi deficiency, which means the same as Yin syndrome (deficiency/empty) or as excess Qi that means the Yang syndrome (excess/plentitude) [5]. The acupuncture involves the stimulation of certain points along to the meridians making the free flow of Qi possible [6].

An objective way of measuring this Qi is based on the Ryodoraku method developed by Dr Nakatani in Japan in 1947 [7]. Dr Nakatani noted the existence of electric conductance points on the body and organized them into Ryodorakus; that is, electricity-conducting routes whose path is similar to the meridians route. He related 24 Ryodoraku Points Representative of Measurement (PRRM), twelve on each side of the body (right and left), which can describe the level of Qi in the 12 main meridians of acupuncture, because they are points of high concentration of Qi, the majority of which are source points. The values of the measurements are represented in a bioenergetic graph or Ryodoraku graph [8]. These values may reflect the conditions of the meridians and their relative organs, by the analysis and comparison of the changes occurring in microelectrical current [9].

Acupuncture has been used in patients with TMD as an alternative, complementary therapy, or even the main treatment for the reduction of painful symptoms and

improvement of oral function [10]. TCM uses the fundamental principles of Yin and Yang to establish the diagnosis and to seek treatment to solve the problems of human pathology [5,11]. Therefore, it is extremely important to know the energetic manifestations and the imbalance patterns that occur in the meridians in relation to the pathology determined in the case of the present work, the TMD, because they will lead us to the correct use of the energetic therapeutic resources of acupuncture.

The aim of this study was to describe the patterns of Qi imbalance in patients with TMD, by means of the Ryodoraku method.

## 2. Material and methods

### 2.1. Declaration of ethics

The study was approved by the Research Ethics Committee of Piracicaba Dental School-UNICAMP, under the protocol no. 109/2014 and was conducted between July 2015 and June 2016, at the Specialization Clinic of the Piracicaba Dental School (FOP/UNICAMP), in Piracicaba-SP, Brazil and registered on the Platform of Brazilian Clinical Trials under RBR-77y2sp.

### 2.2. Inclusion and exclusion criteria

Adult volunteers from the Piracicaba Dental School and from the Center of Dental Specialties of the city of Piracicaba, of both sexes, aged 20 to 50 years, with TMD of muscular or mixed origin, with or without mouth opening limitation according to the Research diagnostic criteria for temporomandibular disorders [12], were included. Patients with severe trauma or TMJ infections, under treatment with analgesic and/or antiinflammatory drugs, pregnant women, patients who reported being afraid of a needle or who were undergoing some other treatment for TMD, edentulous patients, and patients with total dental prostheses were excluded.

### 2.3. Participants

Initially, 77 volunteers with TMD, from the FOP personnel (students, patients, and employees) and those from the Center of Dental Specialties of the city of Piracicaba were recruited; but 34 were excluded from the study: 16 because they did not meet all the inclusion criteria, 10 because they gave up participating, and eight for other reasons. Thus, the initial sample consisted of 43 volunteers.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات