



Salivary cortisol analysis of drug-dependent families: a quasi-experimental study on the effects of music therapy

Gunnar Taets*, Christian Taets, Leila Bergold, Ângela Abreu and Rafael Jomar
E-mail*: master@ufrj.br

Objective

The aim of the present study was to evaluate the effect of Music therapy on the stress of chemical codependents

Method

Study Design

Quasi-experimental study of the type before and after conducted in a philanthropic institution located in the city of Rio de Janeiro, Brazil, which offers multidisciplinary care (psychiatry, psychology and Music therapy) to Dependent chemical and codependents.

Population

The population of this study was performed by chemical codependents who participated in the Music Therapy session at the institution in which it was conducted. The screening and classification of the chemical codependents was performed by psychiatrists and psychologists before they entered the *setting* of the music therapy. This screening is necessary to determine the type of medical and psychological care to be offered to each group, but all participate in the Music Therapy session. The intentional sample of the study was 30 subjects.

Selection criteria

Criteria of inclusion: to be co-dependent of a dependent on some psychoactive substance (licit or illicit) and to be 18 years or older.

Criteria of exclusion: people who used cortisol inhibitors (glutamine, vitamin C, Whey protein and branched chain amino acids supplements (BCAA), green tea and Magnesium, prednisone, Dexameasona); People with low-level cortisol disease ([Addison's disease](#)) and People with high-level cortisol disease ([Cushing's disease](#)).

Data Collection procedure

The single session of group Music Therapy had 60 minutes of duration and was conducted in January 2019, by a music therapist through singing and was accompanied by a guitar player. It should be emphasized that the choice for single intervention is due to the fact that this study intended to evaluate the immediate effect of Music therapy on stress.

The drug and codependent rehabilitation service has been held at the study institution since 2012. Since the beginning, participants have been choosing songs and forming their own repertoire that has been printed and has been used in all sessions. Among this repertoire with 90 songs, the participants chose those who would like to sing in a group together with the music therapist. For this study, thirteen Brazilian popular songs were chosen by the participants lasting between 3 and 5 minutes each.

In the sound-musical area, the re-creation technique was used, where the participant learns, executes, and interprets any excerpt or all of a musical model; And the receptive technique, where the participant listens to the music and responds to the experience in silence or verbally⁽¹⁶⁾.

We used the biomarker cortisol as a diagnostic feature of stress, as it is considered in the literature⁽²¹⁻²³⁾ as the *stress hormone*. Duly trained nurses collected saliva from the chemical codependents through a small cotton roller kept for 1 to 2 minutes under the tongue, which could also be chewed. After this time, the cotton roller was removed from the mouth and returned to the salivete® being closed and identified with the number of the subject in the study and stored in a styrofoam container to be conducted to the laboratory. The material was conducted at room temperature and when arriving at the laboratory it was stored in refrigerators at -20 °C for further analysis. Saliva collection was performed before the subject entered the *setting* Music therapy and 60 minutes after the start of the session of Music Therapy.

The samples collected were analyzed by the Richet laboratory that has a clinical research nucleus to attend studies of this type, besides having accreditation certification by the College of American Pathologists and the accreditation program of Clinical Laboratories (PALC) of the Accreditation commission of Clinical Laboratories of the Brazilian Society of Clinical Research (SBPC).

The cortisol reference value adopted by the laboratory that analyzed the saliva samples was < 0.252 UG/dL, which corresponds to the values normally found in the period 16:00 to 20:00, the same interval of hours in which the collections occurred.

In addition to saliva for cortisol analysis, duly trained nurses collected, through interviews, sociodemographic and clinical data of the patients, namely: age, gender, self-reported skin color, schooling and of which(s) the Psychoactive substance(S) is dependent.

Data Analysis

Statistical analyses were performed in the software Graph Pad Prisma 7 and the significance level adopted was $p < 0.05$. A comparison of the mean salivary cortisol before and 60 after the music therapy session was performed using the Wilcoxon test.

Ethical aspects

The present study was approved by the Research Ethics Committee of the Psychiatric Institute of the Federal University of Rio de Janeiro in september 2015 under the opinion number: 1,217,635 Following the recommendations of the National Health Council of the Ministry of Health of Brazil⁽²⁴⁾.

Result

The mean age of the subjects was 53 years (± 10.70), and 85% were females. After 60 minutes of the musictherapeutic intervention, there was a statistically significant reduction in the mean levels of salivary cortisol ($p < 0.001$). (Table 1, figure 1)

Table 1 – means and standard deviation of salivary cortisol levels before and 60 minutes after the Musictherapeutic intervention – Rio de Janeiro, 2019

Cortisol	Average (SD)	P Value *
Before	0.234 in (0.13)	
60 Minutes later	0.195 in (0.08)	< 0.001

*Wilcoxon Test

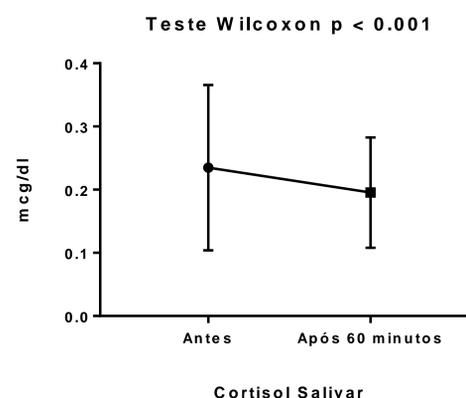


Figure 1 – averages of the salivary cortisol level before and after 60 minutes after the Musictherapeutic intervention – Rio de Janeiro, 2019

Conclusion

The study points out that group Music therapy proved to be effective in reducing the stress of codependents. Therefore, it is recommended to use this complementary therapy for chemical codependents in multiprofessional treatment.