

Saúde:

Referencial médico, clínico
e/ou epidemiológico 2



Luis Henrique Almeida Castro
(Organizador)

Atena
Editora
Ano 2022

Saúde:

Referencial médico, clínico
e/ou epidemiológico 2



Luis Henrique Almeida Castro
(Organizador)

Atena
Editora
Ano 2022

Editora chefe

Profª Drª Antonella Carvalho de Oliveira

Editora executiva

Natalia Oliveira

Assistente editorial

Flávia Roberta Barão

Bibliotecária

Janaina Ramos

Projeto gráfico

Bruno Oliveira

Camila Alves de Cremo

Daphynny Pamplona

Luiza Alves Batista

Natália Sandrini de Azevedo

Imagens da capa

iStock

Edição de arte

Luiza Alves Batista

2022 by Atena Editora

Copyright © Atena Editora

Copyright do texto © 2022 Os autores

Copyright da edição © 2022 Atena Editora

Direitos para esta edição cedidos à Atena Editora pelos autores.

Open access publication by Atena Editora



Todo o conteúdo deste livro está licenciado sob uma Licença de Atribuição Creative Commons. Atribuição-Não-Comercial-NãoDerivativos 4.0 Internacional (CC BY-NC-ND 4.0).

O conteúdo dos artigos e seus dados em sua forma, correção e confiabilidade são de responsabilidade exclusiva dos autores, inclusive não representam necessariamente a posição oficial da Atena Editora. Permitido o *download* da obra e o compartilhamento desde que sejam atribuídos créditos aos autores, mas sem a possibilidade de alterá-la de nenhuma forma ou utilizá-la para fins comerciais.

Todos os manuscritos foram previamente submetidos à avaliação cega pelos pares, membros do Conselho Editorial desta Editora, tendo sido aprovados para a publicação com base em critérios de neutralidade e imparcialidade acadêmica.

A Atena Editora é comprometida em garantir a integridade editorial em todas as etapas do processo de publicação, evitando plágio, dados ou resultados fraudulentos e impedindo que interesses financeiros comprometam os padrões éticos da publicação. Situações suspeitas de má conduta científica serão investigadas sob o mais alto padrão de rigor acadêmico e ético.

Conselho Editorial**Ciências Biológicas e da Saúde**

Profª Drª Aline Silva da Fonte Santa Rosa de Oliveira – Hospital Federal de Bonsucesso

Profª Drª Ana Beatriz Duarte Vieira – Universidade de Brasília

Profª Drª Ana Paula Peron – Universidade Tecnológica Federal do Paraná

Prof. Dr. André Ribeiro da Silva – Universidade de Brasília

Profª Drª Anelise Levay Murari – Universidade Federal de Pelotas

Prof. Dr. Benedito Rodrigues da Silva Neto – Universidade Federal de Goiás



Prof. Dr. Cirênio de Almeida Barbosa – Universidade Federal de Ouro Preto
Prof^o Dr^a Daniela Reis Joaquim de Freitas – Universidade Federal do Piauí
Prof^o Dr^a Débora Luana Ribeiro Pessoa – Universidade Federal do Maranhão
Prof. Dr. Douglas Siqueira de Almeida Chaves – Universidade Federal Rural do Rio de Janeiro
Prof. Dr. Edson da Silva – Universidade Federal dos Vales do Jequitinhonha e Mucuri
Prof^o Dr^a Elizabeth Cordeiro Fernandes – Faculdade Integrada Medicina
Prof^o Dr^a Eleuza Rodrigues Machado – Faculdade Anhanguera de Brasília
Prof^o Dr^a Elane Schwinden Prudêncio – Universidade Federal de Santa Catarina
Prof^o Dr^a Eysler Gonçalves Maia Brasil – Universidade da Integração Internacional da Lusofonia Afro-Brasileira
Prof. Dr. Ferlando Lima Santos – Universidade Federal do Recôncavo da Bahia
Prof^o Dr^a Fernanda Miguel de Andrade – Universidade Federal de Pernambuco
Prof. Dr. Fernando Mendes – Instituto Politécnico de Coimbra – Escola Superior de Saúde de Coimbra
Prof^o Dr^a Gabriela Vieira do Amaral – Universidade de Vassouras
Prof. Dr. Gianfábio Pimentel Franco – Universidade Federal de Santa Maria
Prof. Dr. Helio Franklin Rodrigues de Almeida – Universidade Federal de Rondônia
Prof^o Dr^a Iara Lúcia Tescarollo – Universidade São Francisco
Prof. Dr. Igor Luiz Vieira de Lima Santos – Universidade Federal de Campina Grande
Prof. Dr. Jefferson Thiago Souza – Universidade Estadual do Ceará
Prof. Dr. Jesus Rodrigues Lemos – Universidade Federal do Piauí
Prof. Dr. Jônatas de França Barros – Universidade Federal do Rio Grande do Norte
Prof. Dr. José Aderval Aragão – Universidade Federal de Sergipe
Prof. Dr. José Max Barbosa de Oliveira Junior – Universidade Federal do Oeste do Pará
Prof^o Dr^a Juliana Santana de Curcio – Universidade Federal de Goiás
Prof^o Dr^a Lívia do Carmo Silva – Universidade Federal de Goiás
Prof. Dr. Luís Paulo Souza e Souza – Universidade Federal do Amazonas
Prof^o Dr^a Magnólia de Araújo Campos – Universidade Federal de Campina Grande
Prof. Dr. Marcus Fernando da Silva Praxedes – Universidade Federal do Recôncavo da Bahia
Prof^o Dr^a Maria Tatiane Gonçalves Sá – Universidade do Estado do Pará
Prof. Dr. Maurilio Antonio Varavallo – Universidade Federal do Tocantins
Prof^o Dr^a Mylena Andréa Oliveira Torres – Universidade Ceuma
Prof^o Dr^a Natiéli Piovesan – Instituto Federaci do Rio Grande do Norte
Prof. Dr. Paulo Inada – Universidade Estadual de Maringá
Prof. Dr. Rafael Henrique Silva – Hospital Universitário da Universidade Federal da Grande Dourados
Prof^o Dr^a Regiane Luz Carvalho – Centro Universitário das Faculdades Associadas de Ensino
Prof^o Dr^a Renata Mendes de Freitas – Universidade Federal de Juiz de Fora
Prof^o Dr^a Sheyla Mara Silva de Oliveira – Universidade do Estado do Pará
Prof^o Dr^a Suely Lopes de Azevedo – Universidade Federal Fluminense
Prof^o Dr^a Vanessa da Fontoura Custódio Monteiro – Universidade do Vale do Sapucaí
Prof^o Dr^a Vanessa Lima Gonçalves – Universidade Estadual de Ponta Grossa
Prof^o Dr^a Vanessa Bordin Viera – Universidade Federal de Campina Grande
Prof^o Dr^a Welma Emídio da Silva – Universidade Federal Rural de Pernambuco



Saúde: referencial médico, clínico e/ou epidemiológico 2

Diagramação: Camila Alves de Cremo
Correção: Yaidy Paola Martinez
Indexação: Amanda Kelly da Costa Veiga
Revisão: Os autores
Organizador: Luis Henrique Almeida Castro

Dados Internacionais de Catalogação na Publicação (CIP)

S255 Saúde: referencial médico, clínico e/ou epidemiológico 2 /
Organizador Luis Henrique Almeida Castro. – Ponta
Grossa - PR: Atena, 2022.

Formato: PDF

Requisitos de sistema: Adobe Acrobat Reader

Modo de acesso: World Wide Web

Inclui bibliografia

ISBN 978-65-258-0363-0

DOI: <https://doi.org/10.22533/at.ed.630222906>

1. Saúde. I. Castro, Luis Henrique Almeida
(Organizador). II. Título.

CDD 613

Elaborado por Bibliotecária Janaina Ramos – CRB-8/9166

Atena Editora
Ponta Grossa – Paraná – Brasil
Telefone: +55 (42) 3323-5493
www.atenaeditora.com.br
contato@atenaeditora.com.br



DECLARAÇÃO DOS AUTORES

Os autores desta obra: 1. Atestam não possuir qualquer interesse comercial que constitua um conflito de interesses em relação ao artigo científico publicado; 2. Declaram que participaram ativamente da construção dos respectivos manuscritos, preferencialmente na: a) Concepção do estudo, e/ou aquisição de dados, e/ou análise e interpretação de dados; b) Elaboração do artigo ou revisão com vistas a tornar o material intelectualmente relevante; c) Aprovação final do manuscrito para submissão.; 3. Certificam que os artigos científicos publicados estão completamente isentos de dados e/ou resultados fraudulentos; 4. Confirmam a citação e a referência correta de todos os dados e de interpretações de dados de outras pesquisas; 5. Reconhecem terem informado todas as fontes de financiamento recebidas para a consecução da pesquisa; 6. Autorizam a edição da obra, que incluem os registros de ficha catalográfica, ISBN, DOI e demais indexadores, projeto visual e criação de capa, diagramação de miolo, assim como lançamento e divulgação da mesma conforme critérios da Atena Editora.



DECLARAÇÃO DA EDITORA

A Atena Editora declara, para os devidos fins de direito, que: 1. A presente publicação constitui apenas transferência temporária dos direitos autorais, direito sobre a publicação, inclusive não constitui responsabilidade solidária na criação dos manuscritos publicados, nos termos previstos na Lei sobre direitos autorais (Lei 9610/98), no art. 184 do Código Penal e no art. 927 do Código Civil; 2. Autoriza e incentiva os autores a assinarem contratos com repositórios institucionais, com fins exclusivos de divulgação da obra, desde que com o devido reconhecimento de autoria e edição e sem qualquer finalidade comercial; 3. Todos os e-book são *open access*, *desta forma* não os comercializa em seu site, sites parceiros, plataformas de *e-commerce*, ou qualquer outro meio virtual ou físico, portanto, está isenta de repasses de direitos autorais aos autores; 4. Todos os membros do conselho editorial são doutores e vinculados a instituições de ensino superior públicas, conforme recomendação da CAPES para obtenção do Qualis livro; 5. Não cede, comercializa ou autoriza a utilização dos nomes e e-mails dos autores, bem como nenhum outro dado dos mesmos, para qualquer finalidade que não o escopo da divulgação desta obra.



APRESENTAÇÃO

A obra “Saúde: referencial médico, clínico e/ou epidemiológico” da Atena Editora traz ao leitor 41 artigos de ordem técnica e científica elaborados por pesquisadores e profissionais da saúde de todo o Brasil e engloba revisões sistemáticas, revisões de escopo, relatos e estudos de casos, e investigações clínicas e epidemiológicas embasadas no referencial teórico da área da saúde.

Os textos foram divididos em 2 volumes que abordam diferentes aspectos da prevenção, diagnóstico e tratamento de patologias de alta prevalência na população brasileira como hipertensão arterial, diabetes mellitus e AIDS além de enfermidades tropicais como a febre amarela, doenças raras como a de Kawasaki e ainda fatores depletivos da saúde mental como o uso excessivo de dispositivos móveis da adolescência.

Agradecemos aos autores por suas contribuições científicas nestas temáticas e desejamos a todos uma boa leitura!

Luis Henrique Almeida Castro


SUMÁRIO

CAPÍTULO 1..... 1

INFERTILIDADE EM MULHERES COM QUADRO DE MICROOVARIOS POLICISTICOS: UMA REVISÃO SISTEMÁTICA

Edriene Silva Almeida

Marcio Anderson Sousa Nunes

 <https://doi.org/10.22533/at.ed.6302229061>


CAPÍTULO 2..... 9

INTERVENÇÃO FONOAUDIOLÓGICA EM PACIENTES COM FISSURA LABIOPALATINA: REVISÃO DE LITERATURA

Bianca Gabriele Menezes Souza

Thiago Moraes Guimarães

Kathiane Albuquerque Pereira

 <https://doi.org/10.22533/at.ed.6302229062>

CAPÍTULO 3..... 23

LEITURA E PESQUISA CIENTÍFICA: FERRAMENTAS PARA A CONSTRUÇÃO DO SABER

João Vitor Rosa Ribeiro

Rômulo Valentim Pinheiro

Viviane da Silva


Milena Alves Pereira

Camilly Rossi da Silva

Christiane Germano Guerra

Emanuela Bachetti Sena

Kelly Cristina Suzue Iamaguchi Luz

 <https://doi.org/10.22533/at.ed.6302229063>

CAPÍTULO 4..... 29

MORTALIDADE POR ACIDENTES DE TRANSPORTES TERRESTRES NO PERÍODO DE 2009-2018 NO ESTADO DE MINAS GERAIS, BRASIL

Renata Ferreira Pieroti Machado Pessoa

Luiz Carlos de Abreu

Nathalya das Candeias Pastore Cunha

Italla Maria Pinheiro Bezerra

 <https://doi.org/10.22533/at.ed.6302229064>


CAPÍTULO 5..... 43

USO DE DROGAS PSICODÉLICAS PARA TRATAMENTO DA DEPRESSÃO

Luara Cristina Pereira

Maria Fernanda dos Santos Machado

Fernanda Augusta Penacci

 <https://doi.org/10.22533/at.ed.6302229065>

CAPÍTULO 6..... 44

ORIENTAÇÃO FARMACÊUTICA PARA PROMOÇÃO DO USO RACIONAL DE MEDICAMENTOS DURANTE A PANDEMIA DE COVID-19


Antônio Gonçalves Santana Júnior

Daniel Oliveira da Silva

Renan Melki de Souza

Anna Maly Leão Neves Eduardo

Axell Donelli Leopoldino Lima


 <https://doi.org/10.22533/at.ed.6302229066>

CAPÍTULO 7..... 51

OS BENEFÍCIOS DA MÚSICOTERAPIA PARA O DESENVOLVIMENTO DA CRIANÇA COM AUTISMO: UMA REVISÃO INTEGRATIVA

Mariana de Oliveira Campos

Sebastião Jorge da Cunha Gonçalves

 <https://doi.org/10.22533/at.ed.6302229067>


CAPÍTULO 8..... 62

OS BENEFÍCIOS DOS ÓLEOS ESSENCIAIS DE LAVANDA (*LAVANDULA ANGUSTIFOLIA*) E CAMOMILA ROMANA (*CHAMAEMELUM NOBILE*) NA ESTÉTICA EM MASSAGENS CORPORAIS

Priscila Tenório de Almeida

João Paulo Correia Gomes

Isabella Tereza Ferro Barbosa

 <https://doi.org/10.22533/at.ed.6302229068>

CAPÍTULO 9..... 77

PERFIL CLÍNICO-EPIDEMIOLÓGICO DE PACIENTES IDOSOS EM TRATAMENTO ONCOLÓGICO

Bruno Pereira Lemos

Lucas Leonardo-Silva


Larissa Batista da Silva

Cristiane Alves da Fonseca do Espírito Santo

Jaqueline Gleice Aparecida de Freitas

Flávio Monteiro Ayres

Andréia Juliana Rodrigues Caldeira

 <https://doi.org/10.22533/at.ed.6302229069>

CAPÍTULO 10..... 91

PERFIL EPIDEMIOLÓGICO DA SÍFILIS GESTACIONAL DURANTE PANDEMIA PELO SARS-COV-2 NO MUNICÍPIO DE ARAGUAÍNA ENTRE 2018-2021

Marília Silva do Couto


Maria Cândida Barros Arantes Romano

Rodolfo Lima Araújo

 <https://doi.org/10.22533/at.ed.63022290610>

CAPÍTULO 11	96
PERFIL EPIDEMIOLÓGICO DE MORTALIDADE MATERNA EM HOSPITAL UNIVERSITÁRIO DE SÃO LUÍS – MA Eduardo Moreira Dias  https://doi.org/10.22533/at.ed.63022290611	
CAPÍTULO 12	108
PERFIL EPIDEMIOLÓGICO DOS IDOSOS COM HIV/AIDS NO BRASIL: UMA REVISÃO INTEGRATIVA DE LITERATURA Flávia Christiane de Azevedo Machado Manoel Jerônimo Maia Fernandes Suelen Ferreira de Oliveira  https://doi.org/10.22533/at.ed.63022290612	
CAPÍTULO 13	122
PERFIL NUTRICIONAL DE CRIANÇAS BENEFICIÁRIAS DO PROGRAMA BOLSA FAMÍLIA DE UM MUNICÍPIO PAULISTA Vanessa Patrícia Pereira Motozo Luciana Cisoto Ribeiro Rinaldo Eduardo Machado de Oliveira Juliana Letícia Pereira Goulart Amanda da Silva Paiva Laercio Joel Franco  https://doi.org/10.22533/at.ed.63022290613	
CAPÍTULO 14	131
PRÉ- NATAL NO CONTEXTO DE COVID-19: REPERCUSSÕES ASSISTENCIAIS Maria Eduarda da Silva Rocha Laianny Luize Lima e Silva Antonia Regynara Moreira Rodrigues Emigdio Nogueira Coutinho Kelly Pereira Rodrigues dos Santos Milena France Alves Cavalcante Rodolfo Ritchelle Lima dos Santos Maria Adelaide Moura da Silveira  https://doi.org/10.22533/at.ed.63022290614	
CAPÍTULO 15	143
REPERCUSSÕES DA PANDEMIA DA COVID-19 NA TUBERCULOSE PULMONAR ATIVA Larissa Araújo Lopes Maria Caroliny dos Santos Vale Carlos Drielson da Silva Pereira Rafaella Santos Sabóia Gabriel Pereira de Sousa Luciana Cabral Santana Elaine de Araújo Pereira	


Elane Luiza Costa de Sousa
Amanda Caroline de Souza Sales
Diana Messala Pinheiro da Silva Monteiro
Luís Cláudio Nascimento da Silva
Adrielle Zigmignan

 <https://doi.org/10.22533/at.ed.63022290615>

CAPÍTULO 16..... 154

STUDY DESIGNS AND STATISTICAL APPROACHES FOR BILATERAL CARPAL TUNNES SYNDROME: AN OVERVIEW


Sérgio Murilo Georgeto
Rodrigo Antônio Carvalho Andraus
Eros de Oliveira Junior
Rubens Alexandre da Silva
Suzy Ngomo
Karen Barros Parron Fernandes

 <https://doi.org/10.22533/at.ed.63022290616>

CAPÍTULO 17..... 164

USO DA TERAPIA COMUNITÁRIA INTEGRATIVA ON-LINE COMO DISPOSITIVO DE CUIDADO PARA INDIVÍDUOS EM SOFRIMENTO PSÍQUICO DURANTE A PANDEMIA


Paulo Maurício de Oliveira Vieira
Samuel Marques dos Reis
André de Moura Pedrosa
Marilane Aparecida Santos Sotani

 <https://doi.org/10.22533/at.ed.63022290617>

CAPÍTULO 18..... 172

USO DE RADIOFREQUÊNCIA PARA TRATAMENTO DE RUGAS FACIAIS

Giovanna Giannubilo Beneduce
Emilia S.M Seo
Isabella Barbosa
Manoella de Paiva Sampaio
Sílvia Olegário

 <https://doi.org/10.22533/at.ed.63022290618>

CAPÍTULO 19..... 180

USO DO BELVIQ E SEU POTENCIAL RISCO PARA DESENVOLVIMENTO DE NEOPLASIAS

Bárbara Ribeiro Guedes
Gustavo Gonçalves de Lima
Wellington da Rocha Araújo
Anna Maly Leão Neves Eduardo
Axell Donelli Leopoldino Lima

 <https://doi.org/10.22533/at.ed.63022290619>

CAPÍTULO 20.....	190
USO EXCESSIVO DE DISPOSITIVOS MÓVEIS E PREJUÍZOS A SAÚDE DE ADOLESCENTES	
Yohana Pereira Vieira	
Elizabet Saes-Silva	
Vanise dos Santos Ferreira Viero	
Juliana Quadros Santos Rocha	
Mirelle de Oliveira Saes	
 https://doi.org/10.22533/at.ed.63022290620	
SOBRE O ORGANIZADOR.....	200
ÍNDICE REMISSIVO.....	201

CAPÍTULO 16

STUDY DESIGNS AND STATISTICAL APPROACHES FOR BILATERAL CARPAL TUNNES SYNDROME: AN OVERVIEW

Data de aceite: 01/06/2022

Data de submissão: 08/04/2022

Centre Hospitalier de La Baie, Saguenay,
Québec, Canada, G7H 7K9
<https://orcid.org/0000-0001-6879-436X>

Suzy Ngomo

Département des Sciences de la Santé, Centre Intersectoriel en Santé Durable, Laboratoire de Recherche BioNR, Université du Québec à Chicoutimi (UQAC), Saguenay, Québec, Canada, G7H 2B1
Centre Intégré de Santé et Services Sociaux du Saguenay-Lac-Saint-Jean (CIUSSS SLSJ), Centre Hospitalier de La Baie, Saguenay, Québec, Canada, G7H 7K9
<https://orcid.org/0000-0003-3538-7025>

Sérgio Murilo Georgeto

PhD Student - Doctoral Program of Rehabilitation Sciences – Pitágoras – Unopar University (UNOPAR)
Assistant Professor, Department of Surgery - State University of Londrina (UEL)
Londrina-PR
<https://orcid.org/0000-0002-7563-0088>

Rodrigo Antônio Carvalho Andraus

Full Professor, Doctoral Program of Rehabilitation Sciences – Pitágoras – Unopar University (UNOPAR)
Londrina-PR
<https://orcid.org/0000-0002-3849-0872>

Eros de Oliveira Junior

Associate Professor, Advanced Institute of Teaching, Research and Technology of Londrina (IAEPETEL)
Londrina-PR
<https://orcid.org/0000-0002-8421-0667>

Rubens Alexandre da Silva

Full Professor, Doctoral Program of Rehabilitation Sciences – Pitágoras – Unopar University (UNOPAR)
Londrina-PR

Département des Sciences de la Santé, Centre Intersectoriel en Santé Durable, Laboratoire de Recherche BioNR, Université du Québec à Chicoutimi (UQAC), Saguenay, Québec, Canada, G7H 2B1
Centre Intégré de Santé et Services Sociaux du Saguenay-Lac-Saint-Jean (CIUSSS SLSJ),

Karen Barros Parron Fernandes

Full Professor, Doctoral Program of Rehabilitation Sciences – Pitágoras – Unopar University (UNOPAR)
Londrina-PR
Centre Intégré de Santé et Services Sociaux du Saguenay-Lac-Saint-Jean (CIUSSS SLSJ), Centre Hospitalier de La Baie, Saguenay, Québec, Canada, G7H 7K9
Institute of Education, Research and Innovation at Irmandade da Santa Casa de Londrina (IEPI/ISCAL)
Londrina-PR
<https://orcid.org/0000-0002-1276-4900>

ABSTRACT: Background: Pathologies with bilateral involvement, such as carpal tunnel syndrome (CTS), are relatively common in clinical practice. However, some published data are misleading, as many articles consider only one hand in data analysis. **Objectives:** This article aims to briefly propose a study design and

statistical approach for data analysis of bilateral CTS. **Method:** Statistical reporting. **Results:** Although the results of clinical and surgical interventions are usually reported by randomized clinical trials, the main guidelines do not offer recommendations on how to proceed in cases of interventions in patients with bilateral conditions. Additionally, crossover trials may be an alternative, particularly when comparing different interventions in these patients. Considering the statistical approach, traditional tests are not suitable for bilateral conditions, and result in an overestimation of the results. In contrast, regression models, mixed effects analysis, generalized estimating equations, and multilevel modeling analysis are more reliable. Furthermore, in the case of crossover trials, an ANOVA suitable for crossover design should be chosen with normally distributed data of two groups, while a variance-balanced design is the ideal choice for three or more treatments and Cochran's Statistics. **Conclusions:** When considering the comparison of different therapeutic intervention/rehabilitation techniques in patients with CTS or other peripheral nerve pathologies, the choice of the most appropriate study design and statistical analysis will provide more reliable evidence. **KEYWORDS:** Carpal tunnel syndrome; statistical methods; crossover trial; rehabilitation; surgical treatment.

1 | INTRODUCTION

Bilateral Carpal tunnel syndrome (CTS) has clinical implications and therapeutic results that differ from unilateral NM compression (DEC; ZYLUK, 2018). In addition, the presence of bilateral symptoms generates an interrelationship between the outcome measures, which, if not properly considered in the interpretation of the data, causes an effect of repetition of information, which can bias the statistical analysis (SONG; HAAS; CHUNG, 2009). However, despite the high prevalence of bilateral CTS, there is lack of studies that demonstrate the best way to manage these cases, both in relation to clinical (OSTERGAARD; MEYER; EARP, 2020) and surgical treatment (PETERS; PAGE; COPPIETERS; ROSS *et al.*, 2016).

Even the main guidelines for randomized clinical trials (RCTs), researchers lack guidance on how to work with pathologies of bilateral involvement (MOSELEY; ELKINS, 2018; SHAMSEER; HOPEWELL; ALTMAN; MOHER *et al.*, 2016), both in relation to the allocation of participants and the statistical analyzes that should be implemented, considering the interdependence of the data produced by bilaterality (PADUA; PASQUALETTI; ROSENBAUM, 2005). The allocation of patients with bilateral CTS should be made by individual and not by affected hand. At traditional statistical tests, when analyzing results by wrist and not by individual, lead to an overestimation of results due to repetition of information (BAUER; GOTTFREDSON; DEAN; ZUCKER, 2013). Therefore, it is necessary to use more reliable statistical models to manage the repetition of data resulting from the inclusion of the same participant more than once. Therefore, this study aims to discuss aspects related to study designs for the allocation of participants with bilateral CTS and their respective statistical analysis.

21 CARPAL TUNNEL SYNDROME (CTS)

CTS is a compressive neuropathy of the upper limbs, representing 90% of peripheral compressive neuropathies, and is the most common neuropathy in the general population (ALESSIA; DIX; ASEM; MALA *et al.*, 2020). It has been reported that CTS affects 10% of the global population, with 3 to 4 new cases per 1.000 inhabitants per year (BURTON; CHEN; CHESTERTON; VAN DER WINDT, 2018).

In the United States, the prevalence of CTS is nearly 5%, with an incidence of 1 to 3 cases per 1.000 inhabitant (IBRAHIM; MAJID; CLARKE; KERSHAW, 2009). CTS has a higher incidence in women aged 45–65 years and tends to be bilateral in 60%–65% of cases (TADJERBASHI; ÅKESSON; ATROSHI, 2019). Additionally, there is an increase in the prevalence and severity of this pathology with aging (CHAPMAN, 2017).

Clinical signs of CTS, such as pain, numbness, and tingling at the median nerve of the upper limbs, may be associated with muscle weakness and atrophy, with a marked impairment of manual abilities and health-related quality of life (BURTON; CHEN; CHESTERTON; VAN DER WINDT, 2018).

It has been reported that surgical treatment of CTS carries an annual cost of more than 2 billion dollars (MILONE; KARIM; KLIFTO; CAPO, 2019). In Brazil, the estimated cost of CTS surgeries at the Unified Health System is nearly 30 million reais (MAGALHÃES; FERNANDES; ALKMIM; ANJOS, 2017).

The main factors associated with CTS are older age, sex, obesity, diabetes mellitus, rheumatic arthritis (PADUA; CORACI; ERRA; PAZZAGLIA *et al.*, 2016), and manual labor, particularly jobs that require manual strength and physical activity (BECKER; SCALCO; PIETROSKI; CELLI *et al.*, 2014).

Treatment for CTS may be clinical or surgical, the choice of which is based on disease severity. The use of clinical therapies is indicated for the treatment of CTS with mild or moderate impairment (HUISSTEDE; FRIDEN; COERT; HOOGVLIET *et al.*, 2014). Therapeutic approaches include modification of daily life activities, low-level laser therapy, ultrasound therapy, stretching, and myofascial manipulation (ARMAGAN; BAKILAN; OZGEN; MEHMETOGLU *et al.*, 2014; CHANG; HSIEH; HORNG; CHEN *et al.*, 2014; FUSAKUL; ARANYAVALAI; SAENSRI; THIENGWITTAYAPORN, 2014). However, surgical treatment of this neuropathy is indicated when severe involvement of the median nerve is observed during clinical evaluation or electroneuromyography (CHA; SHIN; AHN; BEOM *et al.*, 2016). Open or endoscopic surgery can also be used, despite several studies indicating no statistical difference when comparing the outcomes of both techniques in this patient group (VASILIADIS; GEORGOULAS; SHRIER; SALANTI *et al.*, 2014). The high incidence of CTS in both developed and developing countries, as well as the clinical features and negative impact of the disease, demonstrates the relevance of this topic, which is confirmed by several published articles involving different aspects of the management of such cases

(DE OLIVEIRA FILHO; DE OLIVEIRA, 2017).

3 I STUDY DESIGNS IN BILATERAL CTS

Although CTS is mostly bilateral, insufficient studies have used samples composed exclusively of this population. Individuals with bilateral CTS have peculiar clinical characteristics that influence both the therapeutic results (LARSEN; SØRENSEN; CRONE; WEIS *et al.*, 2013) and data analysis. Moreover, statistical methods that do not consider each hand as an interrelated event overestimate the outcome (PADUA; PASQUALETTI; ROSENBAUM, 2005).

The results of clinical and surgical interventions are usually reported in randomized clinical trials. Considering the need for improvement in the methods of randomized clinical trials, guidelines such as Consolidated Standards of Reporting Trials – CONSORT (SHAMSEER; HOPEWELL; ALTMAN; MOHER *et al.*, 2016) and Physiotherapy Evidence Database - PEDro (MOSELEY; ELKINS, 2018), and Hooked on Evidence (SCHREIBER; STERN, 2005) the latter two being developed specifically for rehabilitation studies. However, there is no recommendation in these guidelines on how to deal with bilateral conditions, which are relatively common in medical practice.

Crossover trials may be an alternative to randomized double-blind studies. Crossover designs are useful for studies where the patients receive a prespecified sequence of treatments during consecutive periods of time for evaluation (TUDOR; KOCH; CATELLIER, 2000). The patients' outcomes are measured during each period and the patients serve as their own control, assuming similar conditions for evaluation across treatment periods for each patient (JOHNSON, 2010). Additionally, it is possible to implement a washout period between consecutive periods so that the preceding treatment does not influence the response to the next treatment, allowing any residual effects of treatments to be minimized (SEDGWICK, 2014). Briefly, the crossover trial is a “within subject” study design, which seems to be a reliable option, particularly for research studies that aim to compare different interventions in the same individuals. The crossover design has numerous advantages that investigators may wish to use for early-stage trials. The strength of this design is that the interventions under investigation are evaluated within the same patients, thus eliminating between-subject variability (MACLURE, 1991). Furthermore, this trial design permits head-to-head trial opportunities, and patients receiving multiple treatments can express preferences for or against treatments (MILLS; CHAN; WU; VAIL *et al.*, 2009).

Crossover studies are extremely popular for the study of new and developmental drugs ((BROWN JR, 1980)) and are most appropriate in studies where the effects of the treatment(s) are short-lived and reversible, and are best suited to trials related to symptomatic conditions or diseases (CLEOPHAS, 1990; ELBOURNE; ALTMAN; HIGGINS; CURTIN *et al.*, 2002).

4 | STATISTICAL ANALYSIS IN BILATERAL CTS

CTS is usually a bilateral pathology, in which the dominant hand has a worse severity status. Statistical approaches that do not consider the bilateral interdependence of the data do not consider the real physio-pathological expression of CTS. CTS has a complex pathology, with clinical implications on both sides, involving both the central and peripheral nervous systems instead of a simple compression that affects the median nerve in both hands (MAEDA; KETTNER; KIM; KIM *et al.*, 2016).

However, some of the published literature regarding these cases is misleading for several reasons. First, many articles about clinical or surgical interventions only consider one hand in the data analysis, even if the patient reports pain in both hands (PETERS; PAGE; COPPIETERS; ROSS *et al.*, 2016). Moreover, many studies do not consider the effect of repeated information, which may introduce bias in the data analysis if a proper statistical approach is not applied (SONG; HAAS; CHUNG, 2009). Additionally, some studies have described bilateral data instead of considering bilateral information in the statistical analysis (PADUA; PASQUALETTI; ROSENBAUM, 2005).

To consider the continuous or categorical characteristics between interdependent groups, the use of traditional tests, such as the t-test, chi square test, ANOVA, Kruskal–Wallis, and Mann–Whitney test, are unsuitable for bilateral conditions, and create an overestimation of the results (WINTERS; WINTERS; AMEDEE, 2010). Additionally, the description of only one hand for the analysis, or the inclusion of both hands from the same individual creates an artificial increase in the sample size, which predisposes the results to a type I error (SONG; HAAS; CHUNG, 2009).

A better option to analyze the repeated data arising from bilateral pathologies would be the use of regression models (ALI; BHASKAR, 2016) and the analysis of mixed effects (ZEGER; LIANG, 1992). Additionally, the generalized estimating equation (GEE) is a less used but still suitable option that is found in some statistical software; the GEE allows the results from both hands to be grouped and the models to be compared considering the correlations between observations for everyone (Johnson, 2010). Additionally, multilevel modeling analysis is a method that analyzes data with multilevel variability. Multilevel models can connect dependent observations that lay bilateral characteristics (DIEZ-ROUX, 2000).

Furthermore, while crossover trials are supposed to reduce the standard errors for treatment comparisons, a problem may occur if there are carryover or residual effects from a treatment given in one period to a treatment given in a subsequent period. Carryover exists when a treatment (or intervention) “A” is given in the first period and continues to affect treatment “B”, which is given in the subsequent period (JOHNSON, 2010).

For the analysis of more complicated designs and further investigation of carryover effects, as well as interactions involving treatment effects, models that address conditional distributions of responses within patients can be applied. This potential source of bias is akin

to confounding in an epidemiological study and implies that, to some extent, the analysis of data from a crossover trial will inevitably rely more on assumptions and modeling, and less directly on the randomization, than a conventional parallel group study (JONES; KENWARD, 1989).

A crossover trial has a special type of repeated measures design, and the variance-covariance structure of the repeated measures should be taken into consideration when analyzing the collected data.

Crossover data are examples of repeated measurements. Consequently, a key concept in the design and analysis of crossover trials is between-subject and within-subject information. Between-subject information is contained in the total (or mean) of the measurements from a subject, while within-subject information is contained among all differences in the measurements from a subject (JONES; KENWARD, 1989). Statistical analysis of data repeated in the same individuals because of bilateral involvement is done by a specific ANOVA for crossover design (Tudor et al., 2000)

In cases with three or more treatments, there will be more than one possible contrast between the treatment effects. In such situations, a variance-balanced design is the ideal choice because the variance of every estimated pairwise comparison is equal to the same constant value, such as in the Williams design (ISAAC; DEAN; OSTROM, 2001) The Williams design also possess a combinatorial balance in the sense that every treatment follows every other treatment (except itself) the same number of times, and is a special case of sequentially counterbalanced Latin squares (WILLIAMS, 1949).

Additionally, the analysis of non-normal crossover data falls into the class of analyses of non-normal clustered or dependent data. Such analyses are more complex than those for continuous data based on a linear model (KENWARD; JONES, 2007). There are two main reasons for this. First, there is no single “natural” choice of multivariate model in such settings for which to parallel the multivariate normal linear model. Second, for most problems in this class, it is appropriate to assume a non-linear relationship between the mean or expectation of an observation and the linear predictor with various fixed effects [(KENWARD; JONES, 2007; MOLENBERGHS; VERBEKE, 2005). Therefore, a straightforward nonparametric method can be used for the comparison of treatments in situations where one can assume that neither carryover nor period effects are present (TUDOR; KOCH; CATELLIER, 2000). In such cases, Mantel-Haenszel statistics or Cochran analyzes can be used if the response variable is dichotomous. It is based on Mantel–Haenszel statistics with the respective patients as strata, within which the association between treatments and ordinal outcomes is assessed (Tudor et al., 2000). In addition, the dichotomous response variable is comparable to Cochran’s statistics (STOKES; DAVIS; KOCH, 1995).

5 | CONCLUSIONS

Although randomized controlled trials are the primary choice for comparing different interventions, considering the frequent bilateral condition in CTS, crossover trials may be another suitable option, particularly when comparing different interventions in these patients. Considering the statistical approach, traditional tests are not suitable for bilateral conditions and result in an overestimation of the results. Regression models, mixed effects analysis, generalized estimating equations, and multilevel modeling analysis are more reliable methods for this condition.

In the case of crossover trials an ANOVA that is suitable for the crossover design should be chosen. However, when there are three or more treatments, a variance-balanced design is the ideal choice, whereas Cochran's statistics may be chosen for dichotomous response variables.

Therefore, when considering the comparison of therapeutic interventions or different rehabilitation techniques in patients with CTS or other peripheral nerve pathologies, the choice of the most appropriate study design and statistical analysis will provide more reliable evidence.

REFERENCES

- ALESSIA, G.; DIX, O.; ASEM, S.; MALA, T. *et al.* Carpal Tunnel Syndrome: A Review of Literature. **Cureus**, 12, n. 3, 2020.
- ALI, Z.; BHASKAR, S. B. Basic statistical tools in research and data analysis. **Indian J Anaesth**, 60, n. 9, p. 662-669, Sep 2016.
- ARMAGAN, O.; BAKILAN, F.; OZGEN, M.; MEHMETOGLU, O. *et al.* Effects of placebo-controlled continuous and pulsed ultrasound treatments on carpal tunnel syndrome: a randomized trial. **Clinics**, 69, n. 8, p. 524-528, 2014.
- BAUER, D. J.; GOTTFREDSON, N. C.; DEAN, D.; ZUCKER, R. A. Analyzing repeated measures data on individuals nested within groups: Accounting for dynamic group effects. **Psychological methods**, 18, n. 1, p. 1-30, 2013.
- BECKER, J.; SCALCO, R. S.; PIETROSKI, F.; CELLI, L. F. S. *et al.* Is carpal tunnel syndrome a slow, chronic, progressive nerve entrapment? **Clinical Neurophysiology**, 125, n. 3, p. 642-646, 2014.
- BROWN JR, B. W. The crossover experiment for clinical trials. **Biometrics**, p. 69-79, 1980.
- BURTON, C. L.; CHEN, Y.; CHESTERTON, L. S.; VAN DER WINDT, D. A. Trends in the prevalence, incidence and surgical management of carpal tunnel syndrome between 1993 and 2013: an observational analysis of UK primary care records. **BMJ open**, 8, n. 6, p. e020166, 2018.
- CHA, S. M.; SHIN, H. D.; AHN, J. S.; BEOM, J. W. *et al.* Differences in the postoperative outcomes according to the primary treatment options chosen by patients with carpal tunnel syndrome: conservative versus operative treatment. **Annals of Plastic Surgery**, 77, n. 1, p. 80-84, 2016.

CHANG, Y.; HSIEH, S.; HORNG, Y.; CHEN, H. *et al.* Comparative effectiveness of ultrasound and paraffin therapy in patients with carpal tunnel syndrome: a randomized trial. **BMC musculoskeletal disorders**, v.15, p. 399, DOI: 10.1186/1471-2474-15-399.

CHAPMAN, T. K., N.: Maltenfort, M.: Ilyas, A. M. Prospective Evaluation of Opioid Consumption Following Carpal Tunnel Release Surgery. **Hand (N Y)**, 12, n. 1, p. 39-42, Jan 2017.

CLEOPHAS, T. J. A simple method for the estimation of interaction bias in crossover studies. **The Journal of Clinical Pharmacology**, 30, n. 11, p. 1036-1040, 1990.

DE OLIVEIRA FILHO, J. R.; DE OLIVEIRA, A. C. R. Síndrome do túnel do carpo na esfera trabalhista. 2017.

DEC, P.; ZYLUK, A. Bilateral carpal tunnel syndrome—A review. **Neurologia i Neurochirurgia Polska**, 52, n. 1, p. 79-83, 2018.

DIEZ-ROUX, A. V. Multilevel analysis in public health research. **Annual review of public health**, 21, n. 1, p. 171-192, 2000.

ELBOURNE, D. R.; ALTMAN, D. G.; HIGGINS, J. P.; CURTIN, F. *et al.* Meta-analyses involving cross-over trials: methodological issues. **International journal of epidemiology**, 31, n. 1, p. 140-149, 2002.

FUSAKUL, Y.; ARANYAVALAI, T.; SAENSRI, P.; THIENGWITTAYAPORN, S. Low-level laser therapy with a wrist splint to treat carpal tunnel syndrome: a double-blinded randomized controlled trial. **Lasers in medical science**, v.29, n. 3, p. 1279-1287.

HUISSTEDE, B. M.; FRIDEN, J.; COERT, J. H.; HOOGVLIET, P. *et al.* Carpal tunnel syndrome: hand surgeons, hand therapists, and physical medicine and rehabilitation physicians agree on a multidisciplinary treatment guideline-results from the European HANDGUIDE Study. **Arch Phys Med Rehabil**, 95, n. 12, p. 2253-2263, Dec 2014.

IBRAHIM, T.; MAJID, I.; CLARKE, M.; KERSHAW, C. J. Outcome of carpal tunnel decompression: the influence of age, gender, and occupation. **Int Orthop**, 33, n. 5, p. 1305-1309, Oct 2009.

ISAAC, P.; DEAN, A.; OSTROM, T. Generating pairwise balanced Latin squares. **Stat. Appl**, 3, p. 25-46, 2001.

JOHNSON, D. E. Crossover experiments. **Wiley Interdisciplinary Reviews: Computational Statistics**, 2, n. 5, p. 620-625, 2010.

JONES, B.; KENWARD, M. G. **Design and analysis of cross-over trials**. Chapman and Hall/CRC, 1989. 0429214367.

KENWARD, M. G.; JONES, B. 15 design and analysis of cross-over trials. **Handbook of Statistics**, 27, p. 464-490, 2007.

LARSEN, M. B.; SØRENSEN, A.; CRONE, K.; WEIS, T. *et al.* Carpal tunnel release: a randomized comparison of three surgical methods. **Journal of Hand Surgery (European Volume)**, 38, n. 6, p. 646-650, 2013.

MACLURE, M. The case-crossover design: a method for studying transient effects on the risk of acute events. **American journal of epidemiology**, 133, n. 2, p. 144-153, 1991.

MAEDA, Y.; KETTNER, N.; KIM, J.; KIM, H. *et al.* Primary somatosensory/motor cortical thickness distinguishes paresthesia-dominant from pain-dominant carpal tunnel syndrome. **Pain**, 157, n. 5, p. 1085-1093, 2016.

MAGALHÃES, M. J. d. S. d.; FERNANDES, J. L. S.; ALKMIM, M. S.; ANJOS, E. B. d. Epidemiology and Estimated Cost of Surgeries for Carpal Tunnel Syndrome Conducted by the Unified Health System in Brazil (2008–2016). **Arquivos Brasileiros de Neurocirurgia: Brazilian Neurosurgery**, 38, n. 02, p. 086-093, 2017.

MILLS, E. J.; CHAN, A.-W.; WU, P.; VAIL, A. *et al.* Design, analysis, and presentation of crossover trials. **Trials**, 10, n. 1, p. 1-6, 2009.

MILONE, M. T.; KARIM, A.; KLIFTO, C. S.; CAPO, J. T. Analysis of expected costs of carpal tunnel syndrome treatment strategies. **Hand**, 14, n. 3, p. 317-323, 2019.

MOLENBERGHS, G.; VERBEKE, G. Models for discrete longitudinal data. 2005.

MOSELEY, A.; ELKINS, M. Physiotherapy Evidence Database (PEDro): 18.6 million questions answered... and counting. **Fisioterapia (Madr., Ed. impr.)**, p. 109-111, 2018.

OSTERGAARD, P. J.; MEYER, M. A.; EARP, B. E. Non-operative Treatment of Carpal Tunnel Syndrome. **Current Reviews in Musculoskeletal Medicine**, p. 1-7, 2020.

PADUA, L.; CORACI, D.; ERRA, C.; PAZZAGLIA, C. *et al.* Carpal tunnel syndrome: clinical features, diagnosis, and management. **The Lancet Neurology**, 15, n. 12, p. 1273-1284, 2016.

PADUA, L.; PASQUALETTI, P.; ROSENBAUM, R. One patient, two carpal tunnels: statistical and clinical analysis—by hand or by patient? **Clinical Neurophysiology**, 2, n. 116, p. 241-243, 2005.

PETERS, S.; PAGE, M. J.; COPPIETERS, M. W.; ROSS, M. *et al.* Rehabilitation following carpal tunnel release. **Cochrane Database of Systematic Reviews**, n. 2, 2016.

SCHREIBER, J.; STERN, P. A review of the literature on evidence-based practice in physical therapy. **Internet Journal of Allied Health Sciences and Practice**, 3, n. 4, p. 9, 2005.

SEDGWICK, P. What is a crossover trial? **BMJ**, 348, p. g 3191, 2014.

SHAMSEER, L.; HOPEWELL, S.; ALTMAN, D. G.; MOHER, D. *et al.* Update on the endorsement of CONSORT by high impact factor journals: a survey of journal "Instructions to Authors" in 2014. **Trials**, 17, n. 1, p. 301, 2016.

SONG, J. W.; HAAS, A.; CHUNG, K. C. Applications of statistical tests in hand surgery. **The Journal of hand surgery**, 34, n. 10, p. 1872-1881, 2009.

STOKES, M. E.; DAVIS, C. S.; KOCH, G. G. Categorical data analysis using the SAS system. SAS Institute. **Inc., Cary, NC**, p. 34-35, 1995.

TADJERBASHI, K.; ÅKESSON, A.; ATROSHI, I. Incidence of referred carpal tunnel syndrome and carpal tunnel release surgery in the general population: increase over time and regional variations. **Journal of Orthopaedic Surgery**, 27, n. 1, p. 2309499019825572, 2019.

TUDOR, G. E.; KOCH, G. G.; CATELLIER, D. 20 Statistical methods for crossover designs in bioenvironmental and public health studies. **Handbook of Statistics**, 18, p. 571-614, 2000.

VASILADIS, H. S.; GEORGOULAS, P.; SHRIER, I.; SALANTI, G. *et al.* Endoscopic release for carpal tunnel syndrome. **Cochrane Database of Systematic Reviews**, n. 1, 2014.

WILLIAMS, E. J. Experimental designs balanced for the estimation of residual effects of treatments. **Australian Journal of Chemistry**, 2, n. 2, p. 149-168, 1949.

WINTERS, R.; WINTERS, A.; AMEDEE, R. G. Statistics: a brief overview. **Ochsner Journal**, 10, n. 3, p. 213-216, 2010.

ZEGER, S. L.; LIANG, K. Y. An overview of methods for the analysis of longitudinal data. **Statistics in medicine**, 11, n. 14-15, p. 1825-1839, 1992.

ÍNDICE REMISSIVO

A

Aids 95, 108, 109, 110, 113, 114, 115, 116, 117, 118, 119, 120

Araguaína 91, 93, 94

Autismo 51, 52, 53, 55, 56, 57, 59, 60

B

Belviq 180, 181, 182, 184, 186, 188

Bolsa família 122, 126, 129, 130

C

Camomila romana 62, 63, 66, 67, 73

Chamaemelum nobile 62, 63, 66, 67, 73

Covid-19 44, 45, 46, 47, 48, 49, 50, 131, 132, 133, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 167

Criança autista 58, 59

D

Depressão 43, 67, 89, 112, 168, 190, 191, 192, 193, 194, 197

Dispositivos móveis 190, 191, 192, 193, 195, 196, 197

Drogas psicodélicas 43

F

Fissura labiopalatina 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

Fonoaudiologia 9, 16, 17, 19, 21, 22

H

HIV 108, 109, 110, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 150, 151

Hospital Universitário 96, 97, 99, 100, 101, 102, 103, 107

L

Lavanda 62, 63, 65, 66, 73, 75

Lavandula angustifolia 62, 63, 65, 66, 73, 75

Leitura 23, 24, 25, 26, 46, 57, 169

M

Minas Gerais 4, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 74, 81, 103, 116, 120, 130

Mortalidade 29, 30, 31, 32, 33, 34, 37, 38, 39, 40, 41, 47, 78, 84, 90, 96, 97, 98, 99, 100, 103, 104, 105, 107, 109, 114, 115, 128, 137, 144, 145, 187

Mortalidade materna 96, 97, 98, 99, 100, 103, 104, 105, 107

Musicoterapia 51, 52, 53, 55, 56, 57, 58, 59, 60

N

Neoplasia 78, 186, 187

O

Óleos essenciais 62, 63, 64, 65, 67, 68, 70, 71, 72, 73, 74, 75, 76

Oncologia 79

Orientação farmacêutica 44, 48, 49

P

Paciente idoso 86, 88

Pandemia 44, 45, 46, 47, 48, 49, 50, 91, 93, 94, 95, 131, 132, 133, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 164, 167, 168, 170

Perfil nutricional 88, 122, 123, 129

Pesquisa científica 23, 24, 25

Pré-natal 10, 21, 93, 94, 95, 98, 99, 105, 131, 132, 133, 135, 136, 137, 138, 139, 140, 141, 142

R

Radiofrequência 172, 173, 176, 177, 178, 179

S

São Luís 96, 97, 99, 100, 107, 143

SARS-CoV-2 45, 91, 92, 93, 94, 95, 132, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153

Sífilis gestacional 91, 93, 94, 95

Síndrome do túnel do carpo 161

Sofrimento psíquico 164, 165, 166, 167, 169, 170

T

Terapia comunitária 164, 166, 167, 169, 170, 171

Transporte terrestre 29, 30, 31, 32, 34, 36, 40, 41

Tuberculose 143, 144, 145, 146, 149, 150, 152

Tuberculose pulmonar ativa 143

U

Uso racional de medicamentos 44, 45, 47, 49, 50

Saúde:

Referencial médico, clínico
e/ou epidemiológico 2



www.atenaeditora.com.br 

contato@atenaeditora.com.br 

@atenaeditora 

www.facebook.com/atenaeditora.com.br 


Atena
Editora
Ano 2022

Saúde:

Referencial médico, clínico
e/ou epidemiológico 2



www.atenaeditora.com.br 

contato@atenaeditora.com.br 

[@atenaeditora](https://www.instagram.com/atenaeditora) 

www.facebook.com/atenaeditora.com.br 


Ano 2022