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Letter to the editor

Importance of translational research in the study of orofacial myofunctional disorders

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Dear editors,

Speech-language-hearing studies have been increasing in recent decades around the world, particularly in Brazil[1]. Different research designs are found in the literature regarding the comprehension of orofacial myofunctional disorders, including crosssectional[2], cohort[3], case-control studies[4], randomized clinical trials[5], case reports[6], narrative[7], integrative[8], and systematic reviews[9], and so forth.

Studies have also tried to understand orofacial disorders in animal models to improve knowledge in this area. It is relevant to mention studies that assessed orofacial disorders in experimental models with conditions such as malnutrition[10-12], cerebral palsy[11,13,14], and Parkinson's disease[15,16]. These studies made it possible to analyze complex physiological structures and mechanisms, such as the histochemical analysis of fibers from the masseter and digastric masticatory muscles, which are difficult to analyze in humans.

Moreover, advances in research into orofacial myofunctional disorders have raised new questions and needs, requiring that approaches be reorganized[17]. Hence, a new approach to scientific research has been growing worldwide – namely, translational research, which aims at interdisciplinary research and faster bidirectional exchange between basic and clinical science. Thus, basic laboratory research findings move toward applied environments involving patients and populations[18,19].

The term translational research appeared in the 1960s, especially in oncology. According to the US National Cancer Institute, translational research "translates scientific discoveries into clinical applications to reduce the incidence, morbidity, and mortality of diseases[20]." The contemporary approach to translational research stood out in an editorial published in 2002 in the Journal of the American Medical Association (JAMA), which highlighted the importance of translating new knowledge, mechanisms, and techniques generated by basic scientific research into new approaches to prevent, diagnose, and treat diseases[21].

According to the American Cancer Society, basic science involves laboratory studies that provide the basis for clinical research[21,22], which in turn approaches humans in direct or indirect interaction with the researcher, including the management of their data and/or biological material. Both research types are essential to answer questions about health promotion and the cause, prevention, diagnosis, treatment, and impact of diseases on health services and society[23].

The directionality of translational research is not so clear and has different interpretations. The one most used is the linear and unidirectional perspective (from the bench to the bedside); another model uses likewise linear but bidirectional translation (from the bench to the bedside and, sometimes, back to the bench); and, lastly, in a more complex approach, the translation process is dynamic, with various meanings[18].

Furthermore, according to the United States Institute of Medicine, translational research is unidirectional and includes two areas of translation. One is the process of applying the findings of laboratory research and preclinical studies to the development of human trials and studies (T1). The second area of translation concerns research that aims to improve the adoption of best practices in the community (T2)[24]. In a broader context, other authors approach translational research systemically (T3), demonstrating that it integrates basic research, patient oriented research (individual clinical research), and population-based research in a multidirectional approach, with the long-term goal of improving population health[25,26].

Given the above, translational research can bring a new perspective to studies involving orofacial myofunctional disorders, aiming at health promotion, prevention, diagnosis, and treatment. Research with this approach aims to apply knowledge in real life, improving the clinical application of new therapeutic concepts, directly benefitting the population[27]. Therefore, translational research – whether unidirectional, bidirectional, or multidirectional – is of great relevance to speech-language-hearing sciences, as it helps develop studies that may not only solve the population's health problems but also influence appropriate health policies to meet the needs of patients and communities.

REFERENCES

1. Brasil B de C, Gomes E, Teixeira M do RF. A produção científica de docentes fonoaudiólogos de instituições públicas de ensino superior do Brasil. Avaliação (Campinas). 2020;25(3):72-44. https://doi.org/10.1590/S1414-40772020000300011
2. Pegoraro N de A, Santos CM dos, Colvara BC, Rech RS, Faustino-Silva DD, Hugo FN et al. Prevalence of malocclusion in early childhood and its associated factors in a primary care service in Brazil. CoDAS. 2021;34(2):e20210007. https://doi.org/10.1590/2317-1782/20212021007 PMID: 34816947.
3. Lessa FCR, Enoki C, Feres MFN, Valera FCP, Lima WTA, Matsumoto MAN. Influência do padrão respiratório na morfologia craniofacial. Rev Bras Otorrinolaringol. 2005;71(2):156-60. https://doi.org/10.1590/S0034-72992005000200007
4. Rios NV de F, Fernandes L da C, Andrade CLO de, Santiago AC, Alves C de AD. Phonological productive processes in full-term schoolchildren and small for gestational age: A case-control study. CoDAS. 2022;34(2):e20200340. https://doi.org/10.1590/2317-1782/20212020340 PMID: 34932658.
5. Nixdorf DR, Heo G, Major PW. Randomized controlled trial of botulinum toxin: A for chronic myogenic orofacial pain. Pain. 2002;99(3):465-73. https://doi.org/10.1016/S0304-3959(02)00240-3 PMID: 12406522.
6. Melchior M de O, Magri LV, Mazzetto MO. Distúrbio miofuncional orofacial, um possível fator complicador no manejo da disfunção temporomandibular dolorosa. Relato de caso. BrJP. 2018;1(1):80-6. https://doi.org/10.5935/2595-0118.20180017
7. Shah SS, Nankar MY, Bendgude VD, Shetty BR. Orofacial myofunctional therapy in tongue thrust habit: A narrative review. Int J Clin Pediatr Dent. 2021;14(2):298-303. https://doi.org/10.5005/jp-journals-10005-1926 PMID: 34413610.
8. Ferreira SL de S, Cunha DA da, Almeida ANS de, Cunha MD da, Bastos RS de A, Silva HJ da. The use of photobiomodulation for the muscles of head and neck: An integrative review. Audiol., Commun. Res. 2021;26:e2552. https://doi.org/10.1590/2317-6431-2021-2552
9. Herrero Babiloni A, Guay S, Nixdorf DR, de Beaumont L, Lavigne G. Non-invasive brain stimulation in chronic orofacial pain: a systematic review. J Pain Res. 2018;11:1445-57. https://doi.org/10.2147/JPR.S168705 PMID: 30122975.
10. Ferraz-Pereira KN, da Silva Aragão R, Verdier D, Toscano AE, Lacerda DC, Manhães-de-Castro R et al. Neonatal low-protein diet reduces the masticatory efficiency in rats. Br J Nutr. 2015;114(9):1515-30. https://doi.org/10.1017/S0007114515003062 PMID: 26337745.
11. Lacerda DC, Ferraz-Pereira KN, Visco DB, Pontes PB, Chaves WF, Guzman-Quevedo O et al. Perinatal undernutrition associated to experimental model of cerebral palsy increases adverse effects on chewing in young rats. Physiol Behav. 2017;173:69-78. http://doi.org/10.1016/j.physbeh.2017.01.043 PMID: 28153456.
12. Ferraz-Pereira KN, Toscano AE, Manhães-De-Castro R. Effect of early undernutrition on masticatory morphophysiology: Review of the literature. Arch Oral Biol. 2013;58(11):1735-43. http://doi.org/10.1016/j.archoralbio.2013.06.007 PMID: 23849324.
13. Lacerda DC, Manhães-de-Castro R, Gouveia HJCB, Tourneur Y, Costa de Santana BJ, Assunção Santos RE et al. Treatment with the essential amino acid L-tryptophan reduces masticatory impairments in experimental cerebral palsy. Nutr Neurosci. 2021;24(12):927-39. http://doi.org/10.1080/1028415X.2019.1695360 PMID: 31766953.
14. Lacerda DC, Ferraz-Pereira KN, Bezerra de Morais AT, Costa-de-Santana BJR, Quevedo OG, Manhães-de-Castro R et al. Oro-facial functions in experimental models of cerebral palsy: A systematic review. J Oral Rehabil. 2017;44(4):251-60. http://doi.org/10.1111/joor.12489 PMID: 28160523.

15. Russell JA, Ciucci MR, Hammer MJ, Connor NP. Videofluorographic assessment of deglutitive behaviors in a rat model of aging and Parkinson disease. Dysphagia. 2013;28(1):95-104. http://doi.org/10.1007/s00455-012-9417-x PMID: 22763806.

16. Salamone JD, Mayorga AJ, Trevitt JT, Cousins MS, Conlan A, Nawab A. Tremulous jaw movements in rats: A model of parkinsonian tremor. Prog Neurobiol. 1998;56(6):591-611. http://doi.org/10.1016/s0301-0082(98)00053-7 PMID: 9871939.

17. Tomaz-Morais J, Lima JAS de, Luckwü-Lucena BT, Batista AUD, Limeira RRT, Silva SM et al. Integral analysis of Brazilian scientific production in orofacial myology: State the of art and future perspectives. Rev. CEFAC. 2016;18(2):520-32. https://doi.org/10.1590/1982-0216201618218115

18. Guimarães R. Pesquisa translacional: uma interpretação. Ciênc saúde coletiva. 2013;18(6):1731-44. https://doi.org/10.1590/S1413-81232013000600024

19. Advancing translational cancer research: A vision of the Cancer Center and SPORE Programs of the future report of the P30/P50 Ad Hoc Working Group February 2003 [Webpage on the internet]. 2003 44 p. [accessed 2023 jun 10]. Available at: https://deainfo.nci.nih.gov/advisory/ncab/workgroup/archive/p30-p50/P30-P50final12feb03.pdf

20. Wendler MC, Kirkbride G, Wade K, Ferrell L. Translational research: A concept analysis. Res Theory Nurs Pract. 2013;27(3):214-32. https://doi.org/10.1891/1541-6577.27.3.214 PMID: 24422334.

21. Fontanarosa PB, De Angelis CD. Basic science and translational research in JAMA. JAMA. 2002;287(13):1728. https://doi.org/10.1001/jama.287.13.1728 PMID: 11926900.

22. American Cancer Society. Glossary entry: "basic science" [Webpage on the internet]. 2020 [accessed 2023 mai 18]. Available at: https://www.cancer.org/cancer/glossary.html?term=basic+science

23. Brasil. Ministério da Saúde. Plano de ação de pesquisa clínica no Brasil. [Webpage on the internet] Brasília (DF); 2020 [accessed 2023 jul 15]. Available at: https://bvsms.saude.gov.br/bvs/publicacoes/plano_acao_pesquisa_clinica_brasil.pdf

24. Sung NS, Crowley WF, Genel M, Salber P, Sandy L, Sherwood LM et al. Central challenges facing the national clinical research enterprise. JAMA. 2003;289(10):1278-87. https://doi.org/10.1001/jama.289.10.1278 PMID: 12633190.

25. Rubio DMG, Schoenbaum EE, Lee LS, Schteingart DE, Marantz PR, Anderson KE et al. Defining translational research: Implications for training. Acad Med. 2010;85(3):470-5. https://doi.org/10.1097/ACM.0b013e3181ccd618 PMID: 20182120.

26. Mittra J. Repairing the "broken middle" of the health innovation pathway: Exploring diverse practitioner perspectives on the emergence and role of "translational medicine." Sci Technol Stud. 2013;26(3):103-23. https://doi.org/10.23987/sts.55290

27. Cabral Filho JE, Silva Junior JR da, Agra KF. Pesquisa translacional e a importância da sua difusão. Rev Bras Saúde Mater Infant. 2013;13(4):293-4. https://doi.org/10.1590/S1519-38292013000400001

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KNFP: Conceptualization; Formal analysis; Methodology; Project administration; Supervision; Validation; Visualization.