

## Child development in medical education: a relevant knowledge

## Desenvolvimento infantil na educação médica: um saber relevante

Tatiana Malheiros Assumpção<sup>1</sup> 

Patrícia Martins Montanari<sup>2</sup> 

<sup>1</sup>Corresponding author. Faculdade de Ciências Médicas da Santa Casa de São Paulo (São Paulo). São Paulo, Brazil. tatimas13@gmail.com

<sup>2</sup>Faculdade de Ciências Médicas da Santa Casa de São Paulo (São Paulo). São Paulo, Brazil

**ABSTRACT | INTRODUCTION:** Adequate developmental surveillance is fundamental for health promotion, disorder prevention and early diagnosis. For that to occur, it is necessary that doctors have vast knowledge about the theme and are able to apply it in their practice. This recommendation is supported by Brazilian legislation about health care and by the national curricular guidelines for the medical course. Nevertheless, Brazilian medical education does not seem to fulfill this objective.

**MATERIAL AND METHOD:** Documental analysis of the curricula of medical schools, deep interviews and focal groups with doctors who work with children and adolescents about their child and adolescent development background and their thoughts on its relevance for their clinical practice. **RESULTS:** Of 100 curricula evaluated, only 4 had a discipline on developmental psychology. On the other hand, all doctors from the focal groups and individual interviews emphasized its importance and their lack of knowledge about it. There were no differences between the results from the focal groups and the interviews. Learning usually comes from the contact with pathological situations, without any previous reflection about normative human development. This may lead to increased risks for child and adolescent's health and their developmental trajectories. **CONCLUSION:** It is necessary to pay more attention to typical child and adolescent development during medical formation.

**KEYWORDS:** Child Development. Adolescent Development. Developmental Psychology. Medical Education. Social Determinants of Health.

**RESUMO | INTRODUÇÃO:** O adequado monitoramento do desenvolvimento na infância e adolescência é fundamental para a promoção da saúde física e mental dessa parcela da população, bem como para a prevenção e detecção precoce de transtornos. Para isso, é necessário que os profissionais médicos tenham uma base sólida de conhecimento sobre o tema e estejam capacitados para aplicá-lo em sua clínica. Esta recomendação é referendada tanto pela legislação brasileira referente à assistência à saúde quanto pelas Diretrizes Curriculares Nacionais para o Curso de Medicina. No entanto, a formação médica brasileira não parece cumprir este requisito. **MATERIAL E MÉTODO:** Foram realizadas análise documental de currículos de cursos de medicina brasileiros, entrevistas em profundidade e grupos focais com médicos que trabalham com crianças e adolescentes a respeito de sua formação sobre desenvolvimento e suas percepções a respeito de sua importância para a prática. **RESULTADOS:** De cem currículos avaliados, apenas 4 tinham uma disciplina obrigatória sobre psicologia do desenvolvimento. Por outro lado, todos os médicos que participaram das entrevistas e grupos focais salientaram a importância de conhecer os processos de desenvolvimento cognitivo e socioemocional e relataram seu desconhecimento sobre o tema e a deficiência de sua formação. Não houve diferenças entre os relatos obtidos através dos grupos focais e entrevistas individuais. O aprendizado costuma se dar a partir da patologia, sem reflexões anteriores sobre os processos normativos do desenvolvimento humano, levando a potenciais riscos para a saúde e as trajetórias de desenvolvimento de nossas crianças e adolescentes. **CONCLUSÃO:** É necessária uma maior atenção ao processo de desenvolvimento típico na infância e adolescência durante a formação médica.

**PALAVRAS-CHAVE:** Desenvolvimento Infantil. Desenvolvimento do Adolescente. Psicologia do Desenvolvimento. Educação Médica. Determinantes Sociais de Saúde.

Submitted June 19th, 2024, Accepted Sept. 11th, 2024,

Published Oct. 15th, 2024

Inter. J. Educ. Health., Salvador, 2024;8:e5808

<http://dx.doi.org/10.17267/2594-7907ijeh.2024.e5808> | ISSN: 2594-7907

Assigned editors: Iêda Aleluia, Ana Cláudia Carneiro

*How to cite this article:* Assumpção TM, Montanari PM. Child development in medical education: a relevant knowledge. Inter J Educ Health. 2024;8. <http://dx.doi.org/10.17267/2594-7907ijeh.2024.e5808>



## 1. Introduction

In Brazil, child and adolescent healthcare has historically been the domain of pediatricians. More recently, physicians working within the Family Health Strategy, responsible for Primary Health Care in the Sistema Único de Saúde - SUS (Unified Health System), have also been involved. Additionally, there are specialists from other medical fields, such as child and adolescent psychiatrists and neurologists.

The common denominator for all these professionals is the care of the child, who undergoes continuous physical and psychological transformation. To effectively address the child's health needs — ranging from health promotion to prevention and early detection of disorders— it is essential that professionals understand the normative processes of human development. Developmental Psychology, more recently referred to as Developmental Sciences due to its transdisciplinary nature, is the field that studies age-related changes in behavior, cognition, emotions, and personality. It employs theories and research from various disciplines including biology, medicine, psychology, sociology, anthropology, and economics.<sup>1</sup>

The manual "Child Health: Growth and Development"<sup>2</sup> contains a chapter dedicated to issues related to development in childhood and adolescence, highlighting the importance of monitoring these aspects. In addition to strictly physical and biological issues, it addresses learning, language, behavioral changes, and social skills, recommending that physicians be attentive to all these aspects to optimize the developmental potential of their patients and to prevent or detect potential threats early.

For physicians to meet this requirement, their training must encompass typical human developmental issues. This is supported by the National Curricular Guidelines for Medical Courses of 2014<sup>3</sup>, which define an understanding of growth and development

processes in all their facets (including the psychological dimension) across the lifespan as essential content. These guidelines, developed to better address the needs of the national health system, align with various international studies suggesting that an integrated understanding of both physical and psychological development, in conjunction with traditional medical knowledge, can enhance patient care through a biopsychosocial context.<sup>4</sup> Furthermore, this approach significantly increases the workforce capacity in Primary Health Care.<sup>5</sup>

Conversely, studies conducted in Brazil demonstrate a low level of knowledge among primary care physicians regarding developmental topics<sup>6</sup>, as well as inadequate completion of SUS documents for developmental monitoring.<sup>7,8</sup>

This study, stemming from a doctoral thesis conducted at a medical institution in São Paulo<sup>9</sup>, aimed to map the teaching of human development in Brazilian medical schools and to understand the perspectives of physicians who work with children and adolescents on the relevance of this topic for their clinical practice, as well as their strategies for learning and seeking knowledge on the subject. The specific objectives were: (1) to identify the teaching of Developmental Psychology in Brazilian medical schools; (2) to ascertain what physicians who treat children know about Developmental Psychology; and (3) to assess the value these physicians place on these topics.

## 2. Materials and methods

The research that led to this article involved human subjects and was approved by the Research Ethics Committee of the institution where it was conducted (CAEE: 37063220.2.0000.5479). All participants were provided with a written Informed Consent Form (ICF) via email and returned it either manually or digitally signed through the same medium.

To achieve the proposed objectives, the methodology comprised two complementary procedures based on qualitative field research. Firstly, a document analysis of the curricula of medical courses in Brazil, up to May 2019, was conducted, focusing specifically on the instruction related to Developmental Psychology. Additionally, semi-structured individual interviews and focus groups were carried out with physicians who routinely care for children in their professional practice. Participant recruitment was performed through a convenience sampling method, involving email and telephone contacts with physicians who could refer other potential participants. Over one hundred contacts were made, but there was a high rate of refusal due to lack of time or interest in the topic. All individuals who expressed interest were included in the study. Due to low attendance at the focus groups, the research strategy was adjusted to conduct individual interviews. The triangulation of procedures provided a comprehensive view of the study's focus: physicians' knowledge of Developmental Psychology topics, the relevance of these topics in medical school curricula, and the value attributed to this field by professionals.

Curriculum data were collected via electronic communication with medical schools and by researching publicly available curriculum materials on institutional websites. The selection of syllabi for review was based on course titles and descriptors in Health Sciences potentially related to the study topic (e.g., growth and development; human development; child development; adolescent development), as well as other relevant terms (e.g., medical psychology; psychiatry; child psychiatry; pediatrics; mental health; adolescent medicine; human conception and formation; perception, consciousness, and emotion; mental and behavioral issues; child health; mind and brain; family health). The data obtained from the documents were organized into a database, which was later used for descriptive analysis of the results.

Focus groups and in-depth interviews were conducted online by the first author, a child and adolescent psychiatrist, with both resident and experienced physicians (those with over ten years of practice) from the following specialties: pediatrics, pediatric neurology, family and community medicine, and child and adolescent psychiatry. The sample was convenience-based, and participants were contacted via mobile messages or email, utilizing physician groups. Participants were recruited on a voluntary basis. Non-participation was attributed to scheduling conflicts or lack of interest. The basic interview protocol included an introduction of the researcher and the motivation for the study, identification of the participants, their professional background, and specific questions about learning and understanding development in childhood and adolescence, with an emphasis on Developmental Psychology aspects. The interviews were recorded with participants' consent and later transcribed for content analysis.

### 3. Results

#### 3.1 Curriculum analysis

As of May 2019, there were 353 undergraduate medical programs operating in Brazil, distributed across its five geographic regions. We obtained one hundred syllabi from these programs, representing all Brazilian regions and administrative categories of higher education institutions (HEIs), accounting for 28.33% of the total number of medical programs in Brazil.

Among these, only five HEIs offer a dedicated course on Developmental Psychology in their curriculum, with one of these being an elective course. In twenty-two other institutions, although there are courses that address topics related to Developmental Psychology, they are taught as isolated classes, often combined with other subjects relevant to Medical Psychology.

**Table 1.** Presence of Developmental Psychology Content in the Curriculum of one hundred Medical Programs in Brazil

Type of Content	Number of Programs
Exclusive mandatory course on Developmental Psychology	4
Exclusive elective course on Developmental Psychology	1
Developmental Psychology content within broader psychology courses	22
No content on Developmental Psychology	10
No content on psychology in general	63

Source: the authors (2023).

### 3.2 Focus groups and in-depth interviews

A total of nineteen physicians participated in the interviews and focus groups: 4 family and community doctors, 9 pediatricians (including two pediatric neurologists), and 6 child and adolescent psychiatrists. Ten individual interviews and two focus groups were conducted (one with five pediatricians and the other with four psychiatrists), each lasting between 1 to 1.5 hours. The participants completed their undergraduate and residency training in medical schools located in the South, Southeast, Central-West, and North regions of Brazil. Thus, there was no representation from physicians from the Northeast region of Brazil.

Following the transcription and in-depth review of recorded audio, which was sent to participants for approval, key excerpts and comments were categorized into nineteen thematic categories, as detailed below. Categorization was conducted jointly for data obtained from both focus groups and interviews, as no significant differences emerged between the narratives upon thorough review. The detailed examination of some contents will be addressed in the discussion.

1. Knowledge about the field of Developmental Psychology
2. Relationship between development and the practice of pediatrics and childcare
3. Relationship between development and mental health
4. Learning about the normal based on the pathological
5. Policies for child and adolescent health
6. Family and parenting issues
7. Formal education on development in undergraduate medical training
8. Formal education on development in medical residency
9. Value judgment on knowledge about development
10. Definition of development in childhood and adolescence: complexity
11. Areas of development
12. Professionals qualified for developmental monitoring
13. Developmental assessment
14. Supports sought in clinical practice when needed
15. Topics sought for information and reasons for concern
16. Approaching families in cases of suspected developmental issues
17. External influences on development beyond the family
18. The role of Unidades Básicas de Saúde – UBS (Basic Health Units) in developmental monitoring and follow-up
19. Reflections for the future

**Table 2.** Excerpts from In-Depth Interviews by Thematic Category Groupings

<b>Categories 1, 10, and 11</b>	<i>"I think development is a natural and complex process, quite complex, with multiple determinants, which is stimulated and rehabilitated. It's a latent potential in every human being. But at the same time, it determines opportunities" (Pediatrician).</i>
<b>Categories 2, 5, 7, and 8</b>	<i>"There's a very biological, positivist bias in medicine that focuses on bodily functions and organic pathologies. And I think there is a more direct causality relationship, what's causing something... And as it is an area that is more... not so subjective, because there are objective aspects of development, but it ends up being very dissociated, mind and body. It is very focused on the body as if it were the most important thing, and the mind is left for, I don't know, another specialist" (CAP Resident).</i>  <i>"I think childcare is a very important aspect that often... especially for pediatricians, and for those studying development, it's very important, but often, since it's not an emergency issue, it's sometimes undervalued" (Pediatrics Resident).</i>
<b>Categories 3 and 13</b>	<i>"Complaints of anxiety, even suicide attempts, depression, are increasing a lot and we don't know how to handle it, that's the truth" (Pediatrics Resident).</i>  <i>"When it is a child, we include, we question about development, right? But this psychic part doesn't really exist. [With adolescents] it's more when we face a complaint" (FH Doctor).</i>
<b>Category 4</b>	<i>"Normal is what doesn't cause discomfort. Normal is what doesn't cause... If they are complaining, it's because it's not normal. But often, that's just a... simply an outburst, something that child is going through, right? It will be something specific, not a development problem, right?" (FH Resident).</i>
<b>Categories 6 and 16</b>	<i>"When I see a child that I perceive something is wrong, not normal. And then I find myself in the dilemma of how to tell the mother. I'm unsure whether to refer to a specialist, what I can do, if I really have this diagnosis. Sometimes that dilemma, the mother often doesn't even have an idea of what's happening" (FH Doctor).</i>
<b>Category 9</b>	<i>"It's the basis of our practice" (CAP).</i>  <i>"The most fascinating part of pediatrics is seeing a new human being grow and develop" (Pediatrician).</i>
<b>Category 12</b>	<i>"I think it depends on the professional. There are skilled professionals in all areas, but there are also professionals who study little about this in all areas. So, I think it [depends on] how much attention and willingness they have" (CAP).</i>
<b>Categories 14 and 15</b>	<i>"Neurodevelopmental issues as a whole. We are not very accustomed to it. For example, autism, language disorders, learning disorders in general. And then, related to all this, I forgot to mention intellectual disabilities, right? And in general, what's associated with this, such as psychiatric issues, anxiety disorders, all these behavioral issues, which are often linked to these patients, we don't have much management of it" (Pediatric Neurology Resident).</i>
<b>Category 17</b>	<i>"The people with whom she interacts. Continuously, right? School, when she reaches that age. And what she frequents. With whom this child will interact. Church, park, for better or for worse. But with whom this person interacts regularly. I think we develop with the sequence of things, not with the occasional" (FH Doctor).</i>
<b>Category 18</b>	<i>"Speaking of early development, I have the impression that I receive more referrals via school than from UBS. More from the school than from the pediatrician" (CAP).</i>
<b>Category 19</b>	<i>"Ideally, we would have more specialists. Because, undoubtedly, they would do this job much better than we do, no matter how well-trained we are. But it would certainly be particularly good to have more training" (FH Resident).</i>

Note: FH: Family Health; CAP: Child and Adolescent Psychiatry.  
Source: the authors (2023).

## 4. Discussion

Despite the increase in the number of medical schools over the past few decades, education on Developmental Psychology remains virtually absent from medical curricula. Only a minority of programs incorporate this content, often in a fragmented manner within Medical Psychology courses, with only five programs offering a dedicated course on the topic in its entirety, one of which is optional.

Moreover, an examination of the Pediatric curriculum, which constitutes a significant portion of medical education, revealed content related to physical growth and development, the acquisition of neuro-motor milestones, and, in some instances, language acquisition. However, there was no identifiable content pertaining to cognitive, socio-emotional, or personality development.

Nonetheless:

- Development in all its dimensions is of paramount importance for health promotion and disease prevention, as well as for the appropriate management of health issues occurring at any stage of life (particularly during childhood and adolescence);<sup>10</sup>
- It is recognized as a social determinant of health;<sup>11</sup>
- The National Curriculum Guidelines of 2014 for undergraduate medical programs stipulate that developmental processes must be included in the curricular content.<sup>3</sup>

Thus, this omission of knowledge crucial for medical practice concerning children and adolescents appears perplexing. We propose two hypotheses to explain it: a complete indifference regarding the significance of this content for medical education and/or a lack of awareness about the subject among all stakeholders involved in medical education, including those responsible for developing curricula.

The insights obtained from interviews and focus groups allowed for a deeper investigation into how physicians engage with this specific knowledge, both in their educational trajectories and in their daily practice. Regardless of personal training or years of experience, the professionals who participated in individual interviews demonstrated significant unfamiliarity with the field of Developmental Psychology, often expressing surprise upon being informed about it. Although this question was not explicitly posed in the focus groups, the ensuing discussions revealed greater awareness among child and adolescent psychiatrists and some pediatricians.

Accompanying this unfamiliarity, responses to how development would be defined were considered extremely complex by all the physicians. This inquiry, along with others throughout the focus groups and interviews, prompted reflections where participants attempted to articulate something they seemingly had never sought to express. There was an emphasis on biological regularities (and thus more “objective”) aspects of development, while individual and social dimensions were mentioned less frequently.

Additionally, participants exhibited considerable difficulty integrating the various aspects of development, particularly the relationships between biological and contextual factors, as well as growth/maturation and development. Consequently, a compartmentalized view of the biological, psychological, and social aspects of development prevails. This perspective is at odds with research conducted over the past few decades across diverse fields such as biological sciences<sup>12,13</sup>, Developmental Psychology itself<sup>14</sup>, and social epidemiology.<sup>14-16</sup> For instance, recent advances in the field of epigenetics indicate that the context (environment) in which an individual develops influences the biological manifestations observed later in life (e.g., diseases in childhood or adulthood), which is further complemented and reinforced by studies in life course epidemiology. Therefore, the challenge remains to not only convey knowledge of such areas to clinicians but also to empower them to articulate these concepts in ways that are beneficial for their patients.

On the other hand, all participating physicians affirmed that development in all its aspects (physical, motor, sensory, cognitive, socio-emotional, and personality) is fundamentally important for the proper care of children and adolescents, regardless of the context or specialty. Psychiatrists defined development as “the foundation of clinical practice,” while pediatricians and family physicians noted that the lack of foundational knowledge about what constitutes normal development for each age group leaves them without parameters for their daily clinical work. This is particularly critical in Primary Health Care, where diverse demands arise related to family and peer relationships, academic performance, and mental, emotional, and behavioral changes. This lack of parameters may result in misdiagnoses or the failure to detect problems in their earliest stages, when interventions are most effective.

Despite the high value attributed to knowledge about development in childhood and adolescence, the prevailing assertion was that formal education on the topic has been poor, both at the undergraduate and in specialized residency levels. When neuropsychomotor development was mentioned, it was restricted to developmental milestones up to two years of age and the use of assessment scales.

Numerous reports also highlighted the diminishing emphasis on well-child care, during which developmental monitoring could (and should) occur. Thus, some physicians expressed indignation at the fact that “well-child care ends at two years.” This situation may be related to the Ministry of Health's recommendation, which advocates for seven consultations in the first year of life, two consultations in the second year, and, thereafter, one annual consultation close to the birthday.<sup>2</sup> From the age of two, the common narrative is that the pursuit of pediatric care becomes complaint-driven, resulting in irregular check-ups that are not aimed at developmental surveillance.

Residents have also reported a lack of prolonged periods of follow-up for children that would allow for the monitoring of typical development, with few faculty members specializing in well-child care and minimal interest from specialists in discussing its implementation. Here, we observe another discrepancy between the discourse of physicians regarding the value of well-child care and the realities expressed about teaching and learning methods: all acknowledge the importance of well-child care, but the overvaluation of specialties leads few to engage in it within the educational context. Consequently, the message conveyed to students is that specialties hold greater importance, perpetuating a vicious cycle. In the case of medical training in Brazil, which is heavily focused on specialties and centered around the hospital care model, this results in a general deficiency in knowledge within pediatrics that begins at the undergraduate level and extends through medical residency.

A certain devaluation of the psychological aspects of development was also evident in the discourse of pediatricians and family physicians (though not unexpectedly among psychiatrists), with these aspects considered less objective, more challenging to assess, and the exclusive domain of psychologists, leading to neglect by educators and perpetuating a cycle of ignorance among students.

Another point of interest raised is that even when the subject is addressed during undergraduate education, the importance attributed to it by students is minimal. This raises questions about how to present the topic and sensitize students to something deemed

“too abstract” and distanced from clinical practice compared to other subjects and disciplines that hold greater value within the biomedical approach.

Furthermore, none of the professionals, regardless of their specialty and field of practice, considered their area to be well-prepared to address all issues related to development in childhood and adolescence. The “developmental clinic” emerges as an interdisciplinary field par excellence. This reflects the reality of the knowledge domain but may also lead to a trap where no professional assumes responsibility for coordinating this care, leaving children who require it, so to speak, “adrift.” Among the interviewees, pediatricians and family physicians regarded neuropsychiatrists as the most qualified. Conversely, neuropsychiatrists believe that child psychiatrists possess this qualification, while child psychiatrists contend that pediatricians are the most capable.

As a consequence of this deficiency in formal education regarding normal developmental processes, reports indicated that, in practice, learning about what constitutes typical development occurs through the study and observation of pathological cases, contrary to practices in all other areas of medicine. This gap poses risks to individuals, as it remains unclear to physicians what is normal, thereby opening avenues for classifications of the pathological based on personal experiences and opinions, in addition to the potential for uncritical adherence to diagnostic criteria.

## 5. Conclusion

From a practical perspective, understanding the developmental tasks and skills at different ages is extremely valuable for clinical practice with children and adolescents. This knowledge:

- Assists in Understanding the Child: Enables viewing the child not just as a collection of signs and symptoms, but understanding their history and how events may have impacted them according to their developmental level.
- Establishes Appropriate Goals: Facilitates setting appropriate intervention goals based on the child's current abilities.

- **Plans Effective Interventions:** Helps in planning interventions according to emerging capabilities, thereby promoting development.
- **Enhances Communication and Activities:** Improves communication and planning of age-appropriate activities tailored to each developmental stage.
- **Adjusts Expectations:** Allows for adjusting expectations regarding achievable outcomes based on the child's developmental level.
- **Evaluates Interventions:** Aids in evaluating interventions not only by symptom reduction but also by promoting healthy development.<sup>17</sup>

Therefore, it is essential that general medical training includes discussions on what can be considered typical or atypical at various ages and developmental aspects. Such discussions should cover multiple perspectives on the concept of "normal," which may be understood as:

- **Health versus Disease:** Healthy development as opposed to disease.
- **Statistical Average:** An average of frequencies observed in the population.
- **Ideal to be Achieved:** An ideal to be approximated or achieved.
- **Dynamic Process:** A dynamic process of returning to a previous equilibrium.<sup>18,19</sup>

With a solid foundation in this knowledge, physicians will be better equipped to conduct clinical assessments that enable individualized planning, taking into account both individual and contextual factors.

We acknowledge that this study is preliminary and exploratory and does not aim to provide a definitive analysis on the topic. Additionally, the lack of participants with training from the Northeast region of Brazil creates a gap in the results. However, we believe this study can initiate important reflection on integrating developmental knowledge into the training of future Brazilian doctors.

### Acknowledgments

Coordination for the Improvement of Higher Education Personnel (CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior).

### Authors' contributions

The authors declare that they made substantial contributions to the work in terms of the conception or design of the research; the acquisition, analysis, or interpretation of data for the work; and the drafting or critical revision of the content for important intellectual input. All authors approved the final version to be published and agreed to be accountable for all aspects of the study.

### Conflicts of interest

No financial, legal, or political conflict involving third parties (government, companies, or private foundations, etc.) was declared regarding any aspect of the submitted work (including but not limited to grants and funding, advisory board participation, study design, manuscript preparation, statistical analysis, etc.).

### Indexers

The International Journal of Education and Health is indexed in [DOAJ](#) and [EBSCO](#).



### References

1. Boyd D, Bee H. A criança em crescimento. Porto Alegre: Artmed; 2011.
2. Ministério da Saúde (Brazil). Saúde da Criança: Crescimento e Desenvolvimento. Cadernos de Atenção Básica. [Internet]. Brasília: Ministério da Saúde; 2012. Available from: [https://bvms.saude.gov.br/bvs/publicacoes/saude\\_crianca\\_crescimento\\_desenvolvimento.pdf](https://bvms.saude.gov.br/bvs/publicacoes/saude_crianca_crescimento_desenvolvimento.pdf)
3. Ministério da Educação (Brazil). Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina. [Internet]. Brasília: Ministério da Educação; 2014. Available from: [http://portal.mec.gov.br/index.php?option=com\\_docman&view=download&alias=15514-pces116-14&category\\_slug=abril-2014-pdf&Itemid=30192](http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=15514-pces116-14&category_slug=abril-2014-pdf&Itemid=30192)
4. Fox G, Katz DA, Eddins-Folensbee FF, Folensbee RW. Teaching development in undergraduate and graduate medical education. Child Adolesc Psychiatr Clin N Am. 2007;16(1):67-94. <https://doi.org/10.1016/j.chc.2006.07.006>
5. Benton TD, Fritz GK, Maslow GR. Healthy Minds-Healthy Kids: Integrating Care. Child Adolesc Psychiatr Clin N Am. 2017;26(4):XV-XVI. <https://doi.org/10.1016/j.chc.2017.08.001>



6. Figueiras ACM, Puccini RF, Silva EMK, Pedromônico MRM. Avaliação das práticas e conhecimentos de profissionais da atenção primária à saúde sobre vigilância do desenvolvimento infantil. *Cad Saúde Pública*. 2003;19(6):1691–9. <https://doi.org/10.1590/S0102-311X2003000600013>
7. Almeida AC, Mendes LC, Sad IR, Ramos EG, Fonseca VM, Peixoto MVM. Use of a monitoring tool for growth and development in Brazilian children --- systematic review. *Rev Paul Pediatr*. 2016;34(1):122–31. <https://doi.org/10.1016/j.rppede.2015.12.002>
8. Caminha MFC, Silva SL, Lima MC, Azevedo PTÁCC, Figueira MCS, Batista M. Vigilância do desenvolvimento infantil: análise da situação brasileira. *Rev Paul Pediatr*. 2017;35(1):102–9. <https://doi.org/10.1590/1984-0462/;2017;35;1;00009>
9. Assumpção TM. Desenvolvimento infantil e formação médica [dissertação] [Internet]. São Paulo: Faculdade de Ciências Médicas da Santa Casa de São Paulo; 2023. Available from: <https://fcmsantacasasp.edu.br/wp-content/uploads/2023/06/2023-Tatiana-Malheiros-Assumpcao.pdf>
10. Wilkinson R, Marmot M. Social determinants of health: the solid facts. Geneva: WHO; 2003.
11. Hertzman C. The case for child development as a determinant of health. *Can J Public Health*. 1998;89(Suppl.1):16–21. <https://doi.org/10.1007%2FBF03405090>
12. Xavier MJ, Roman SD, Aitken RJ, Nixon B. Transgenerational inheritance: how impacts to the epigenetic and genetic information of parents affect offspring health. *Hum Reprod Update*. 2019;25(5):518–40. <https://doi.org/10.1093/humupd/dmz017>
13. Wadsworth M, Butterworth S. Early life. In: Marmot TM, Wilkinson RG. *Social Determinants of Health*. New York: Oxford University Press; 2006.
14. Keating DP. Transformative role of epigenetics in child development research: commentary on the special section. *Child Dev*. 2016;87(1):135–42. <https://doi.org/10.1111/cdev.12488>
15. Blane D. The life course, the social gradient, and health. In: Marmot TM, Wilkinson RG. *Social Determinants of Health*. New York: Oxford University Press; 2006.
16. Krieger N. Theories for social epidemiology in the 21st century: an ecosocial perspective. *Int J Epidemiol*. 2001;30(4):668–77. <https://doi.org/10.1093/ije/30.4.668>
17. Davies D. *Child Development, Third Edition: A Practitioner's Guide*. New York, London: The Guilford Press; 2010.
18. Canguilhem G. *O Normal e o Patológico*. Rio de Janeiro: Forense Universitária; 2007.
19. Marcelli D, Cohen D. Principais fontes teóricas da psiquiatria clínica de crianças e adolescentes. In: *Infância e Psicopatologia*. 7a ed. Porto Alegre: Artmed; 2009.