

Health and education conditions in rural settlements in Brazil: A scoping review

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Abstract: Settled families and rural workers face precarious living and working conditions that weaken their health and access to quality education. Health and education indicators are important parameters for planning and implementing public policies to improve these subjects' access to health and education. In light of this, this scoping review aimed at identifying the health and education conditions of families and workers living in rural settlements in Brazil. The SciELO, Scopus, and PubMed databases were searched. After the study screening process, thirty articles published between 1997 and 2021 were included in the review. The studies showed that families and settled workers are highly vulnerable in terms of health and education, with emphasis on the difficulty of accessing health services, leisure and physical activity, goods, and services such as transportation, basic sanitation, and income, as well as all levels of education, especially higher education. The main causes of the advances observed in the conditions of access to education were the constitution of rural education and the National Rural Education Program (*Programa Nacional de Educação na Reforma Agrária* [PRONERA]). The democratization of access to health and education services in rural settlements depends on public policies that

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focus on valuing the socioeconomic, cultural, and educational context of rural people. Therefore, interventions and public policies must aim at expanding access to health and education services in the settlements and promoting autonomy in the relations between work and production.

Keywords: Rural communities. Peasantry. Settled families. Education. Well-being. Quality of life.

Condições de saúde e educação em assentamentos rurais no Brasil: Uma revisão de escopo

Resumo: As famílias e trabalhadores rurais assentados enfrentam condições de vida e trabalho precárias que provocam a fragilização da saúde e do acesso à educação de qualidade. Indicadores de saúde e educação são importantes parâmetros para o planejamento e implementação de políticas públicas para a melhoria de condições de acesso à saúde e educação por parte desses sujeitos. Neste sentido, o objetivo desta revisão de escopo foi identificar as condições de saúde e educação das famílias e dos trabalhadores que vivem em assentamentos rurais no Brasil. Foram consultadas as Bases de Dados SciELO, Scopus e PubMed e, após o processo de triagem dos estudos, trinta artigos, publicados entre os anos de 1997 a 2021, foram incluídos na revisão. Os estudos mostraram que as famílias e trabalhadores assentados apresentam grande vulnerabilidade no que diz respeito à saúde e educação, com destaque para dificuldade de acesso aos serviços de saúde, lazer e atividade física, aos bens e serviços como transporte, saneamento básico e renda, bem como a democratização do acesso a todos os níveis de ensino, principalmente ao ensino superior. Os avanços observados, no que diz respeito às condições de acesso à educação, têm a constituição da Educação do Campo e do Programa Nacional de Educação do campo (PRONERA) como seus principais marcos. A democratização do acesso aos serviços de saúde e educação em assentamentos rurais depende de políticas públicas que atentem para a valorização do contexto socioeconômico, cultural e educativo do homem do campo. Logo, intervenções e políticas públicas devem ser direcionadas a fim de ampliar o acesso aos serviços de saúde e educação nos assentamentos e a autonomia nas relações entre trabalho e produção.

Palavras-chave: Comunidades rurais. Campesinato. Famílias assentadas. Ensino. Bem-estar. Qualidade de vida.

Condiciones de salud y educación en asentamientos rurales de Brasil: Una revisión del alcance

Resumen: Las familias asentadas y los trabajadores rurales enfrentan condiciones de vida y trabajo precarias que debilitan su salud y el acceso a una educación de calidad. Los indicadores de salud y educación son parámetros importantes para la planificación e implementación de políticas públicas para mejorar el acceso de estos sujetos a la salud y la educación. A la luz de esto, esta revisión de alcance tuvo como objetivo identificar las condiciones de salud y educación de las familias y trabajadores que viven en asentamientos rurales en Brasil. Se realizaron búsquedas en las bases de datos SciELO, Scopus y PubMed. Después del proceso de selección del estudio, se incluyeron en la revisión treinta artículos publicados entre 1997 y 2021. Los estudios mostraron que las familias y los trabajadores asentados son altamente vulnerables en términos de salud y educación, con énfasis en la dificultad de acceso a los servicios de salud, esparcimiento y actividad física, bienes y servicios como transporte, saneamiento básico e ingresos, así como todos los niveles de la educación, especialmente la superior. Las principales causas de los avances observados en las condiciones de acceso a la educación fueron la constitución de la educación rural y el Programa Nacional de Educación Rural (PRONERA). La democratización del acceso a los servicios de salud y educación en los asentamientos rurales depende de políticas públicas que se centren en valorar el contexto socioeconómico, cultural y educativo de la población rural. Por lo tanto, las intervenciones y políticas públicas deben apuntar a ampliar el acceso a los servicios de salud y educación en los asentamientos y promover la autonomía en las relaciones entre trabajo y producción.

Palabras clave: Comunidades rurales. Campesinado. Familias asentadas. Educación. Bienestar. Calidad de vida.

1. Introduction

The implementation and development of settlement projects (*Projetos de Assentamento* [PAs]) in rural areas is the essence of the agrarian reform policy in Brazil (FIGUEREDO; SILVA, 2019). The creation of PAs is the responsibility of the National Institute of Colonization and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária* [INCRA]) which also seeks to promote activities that favor the sustainability of these units to improve the quality of life of settled families (FIGUEREDO; SILVA, 2019; GIRARDI; FERNANDES, 2008). Therefore, the institutional management and viability of the PAs in Brazil is a political action of agrarian reform,

under the responsibility of INCRA. This policy has allowed access to land for hundreds of landless rural workers and is a reflection of the history of the struggle of families to conquer their space in the countryside and ensure their livelihood (FIGUEREDO; SILVA, 2019; WANDERLEY, 2014). In 2018, Brazil registered 7,200 PAs throughout the nation, with 0.61 million hectares of occupied land (CATTELAN; MORAES; ROSSONI, 2020). Between 2016 and 2018, just over 10,000 new families were settled (CATTELAN; MORAES; ROSSONI, 2020).

Settled families and rural workers face precarious living and working conditions that weaken their health and access to quality education (SCOPINHO, 2010). The history of health and education in PAs is marked by the scarcity of public health and education services, resulting in alarming epidemiological situations (high rates of contamination by malaria and verminoses, for example) and high illiteracy rates (BERGAMASSO, 1997). In view of this, it is important to highlight that the families and workers that make up the PAs seek not only to conquer the territory for their full development and material production but also ideal conditions for their survival (ALVES, 2019). This refers to the constant need to claim rights and policies aimed at rural workers (ALVES, 2019). For rural workers, good health is associated with the quality of the food produced and the opportunity to eat regularly, contact with the land, the opportunity to manage their own work, social interaction, and the peace of rural life (SCOPINHO, 2010). Otherwise, education in rural areas was severely neglected, which is reflected in the search for the right to schooling and a school linked to the interests and sociocultural development of the different social groups that live and work in the countryside (OLIVEIRA; GARCÍA, 2009).

In view of the trend towards reduction in investments and actions aimed at agrarian reform policies in Brazil (CATTELAN; MORAES; ROSSONI, 2020), it becomes crucial to assess the health and education conditions of settled families and workers. Studies that address these topics are scarce or do not focus on indicators that can be compared and analyzed in depth. An analysis of health

and education indicators are important parameters for planning and implementing public policies to improve these subjects' access to health and education. Therefore, the aim of this scoping review was to identify the health and education conditions of families and workers living in rural settlements in Brazil.

2. Methodology

This descriptive scoping review was conducted according to the PRISMA-ScR checklist and explanation (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) (TRICCO et al., 2018). The review involved the following steps: definition of the objective and guiding question, definition of eligibility criteria, search for studies in the databases, initial selection by reading titles and abstracts, final selection by reading the studies in full, inclusion of studies that met the eligibility criteria and, finally, data extraction and analysis of the included studies.

In April 2021, the Scientific Electronic Library Online (SciELO), Scopus, and PubMed databases were searched using the descriptors "*Saúde*", "*Educação*", "*Assentamentos Rurais*", and "*Brasil*". Additional searches were also performed on Google Scholar and on the reference list of studies included in the review. The search strategy is detailed in Table 1 and was adapted for each database.

Table 1. Search strategy

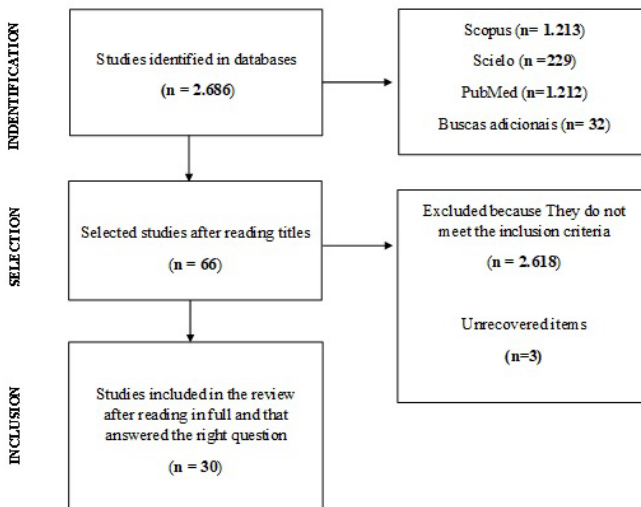
<p>(<i>saúde</i> OR "<i>qualidade de vida</i>" OR "<i>qualidade de vida relacionada à saúde</i>" OR SF-36 OR WHOQOL OR health OR "quality of life" OR "health-related quality of life")</p> <p>OR</p> <p>(<i>educação</i> OR <i>ensino</i> OR <i>aprendizagem</i> OR <i>alfabetização</i> OR <i>analfabetismo</i> OR <i>permanência</i> OR <i>evasão</i> OR "<i>abandono escolar</i>" OR education OR teaching OR learning OR literacy OR illiteracy OR permanence OR dropout OR "school dropout")</p> <p>AND</p> <p>("assentamentos rurais" OR <i>assentamentos</i> OR <i>assentamento</i> OR <i>campo</i> OR <i>campesinato</i> OR "<i>famílias assentadas</i>" OR settlements OR countryside OR peasantry OR "settled families")</p> <p>AND</p> <p>(<i>Brasil</i> OR Brazil OR <i>Brasileiros</i> OR <i>Brasileiras</i> OR Brazilians)</p>

The inclusion criteria were: (1) studies with a qualitative and quantitative approach; (2) review studies and systematic reviews; (3) studies published in either Portuguese or English, with no restrictions on the year of publication; and (4) studies that evaluated health or education conditions in rural settlements in Brazil. We excluded (1) theses, dissertations, books, book chapters, and reviews; (2) studies with specific populations (indigenous or quilombola) or with urban settlers (*favelas*); and (3) articles that could not be retrieved in full, even after contacting the authors. The question guiding this review was: What are the health and education conditions in rural settlements in Brazil?

The results were synthesized by extracting data in a standard table with the descriptive characteristics of the studies included in the review, according to the following categories: year of publication, type of study, topics related to health and education, and main results related to health and education conditions in rural settlements in Brazil.

A total of 2,686 articles were retrieved from the databases using the search strategy. After reading titles and abstracts, 66 articles were selected for full reading. A total of 31 studies met the eligibility criteria and were included in the review. Figure 1 shows the review steps.

Figure 1. Flowchart of the scoping review steps.



3. Results

Table 2 presents the characteristics of the 30 studies included in the qualitative and descriptive analysis, including authorship, year of publication, title, objectives, and methodology. The review included articles published between 1997 and 2021 that aimed at evaluating the health and education conditions in rural settlements in Brazil, such as schooling, mental health, and public policies in health and education, among other topics. A total of 19 studies addressed health aspects in the settlements exclusively, while nine studies addressed issues related to rural education. Only one study addressed both health and education (BERGAMASSO, 1997).

Table 2. Studies included in the scoping review for qualitative/descriptive analysis

No.	Author / Year	Title	Goals	Methodology
01	BERGAMASSO, SMPP, 1997.	<i>A realidade dos assentamentos rurais por detrás dos números</i>	To analyze and discuss the way of life of settlers based on the first agrarian reform census in Brazil.	Literature review
02	VEIGA, G. v. BURLANDY, L. et al. 2001.	<i>Indicadores sócio-econômicos, demográficos e estado nutricional de crianças e adolescentes residentes em um assentamento rural do Rio de Janeiro</i>	To evaluate the socioeconomic indicators and nutritional profiles of 201 children and adolescents from the rural settlement of São José da Boa Morte, Rio de Janeiro.	Cross-sectional study

03	FERREIRA, P., et al., 2003.	<i>Ocorrência de parasitas e comensais intestinais em crianças de escola localizada em assentamento de sem-terras em Campo Florido, Minas Gerais, Brasil</i>	To determine the occurrence of intestinal parasites and commensal organisms in school children in a landless settlement in Campo Florido, Minas Gerais, Brazil.	Cross-sectional study
04	SILVA, R. A., et al., 2004.	<i>Pesquisa sistemática positiva e relação com conhecimento da população de assentamento e reassentamento de ocupação recente em área de Triatoma sordida (Hemiptera, Reduviidae) no Estado de São Paulo, Brasil</i>	To analyze the relationship between households infested with triatomine bugs and knowledge of Chagas disease among residents of settlements and resettlements.	Cross-sectional study
05	CARNEIRO, F. F. et al. 2005.	Health of families from the Landless Workers' Movement and temporary rural workers, Brazil, 2005	To assess the health conditions of families linked to the Landless Rural Workers Movement (<i>Movimento dos Trabalhadores Rurais Sem Terra [MST]</i>) and rural workers.	Comparative, cross-sectional study
06	PRESTES-CARNEIRO, L. E. et al., 2006.	<i>Taeniasis-cysticercosis complex in individuals of a peasants' settlement (Teodoro Sampaio, Pontal of Paranapanema, SP, Brazil)</i>	To evaluate the taeniasis-cysticercosis complex in the population of a peasant settlement in Teodoro Sampaio, São Paulo, Brazil.	Cross-sectional study
07	SOARES, D., 2006.	<i>O "Sonho de Rose": políticas de saúde pública em assentamentos rurais</i>	To evaluate the results of an extension project called "Farmacopéia Popular" and discuss public health policies in rural settlements.	Ethnographic research

08	CAVALCANT; NOGUEIRA, 2008.	<i>Práticas sociais coletivas para a saúde no assentamento Mártires de Abril na Ilha de Mosqueiro – Belém, Pará</i>	To understand the collective social practices regarding health in the Mártires de Abril Settlement (AMA).	Qualitative research
09	DI PIERRO, MC; ANDRADE, MR, 2009.	<i>Escolarização em assentamentos no estado de São Paulo: Uma análise da Pesquisa Nacional de Educação na Reforma Agrária (PNERA)</i>	To evaluate the schooling of children, adolescents, young people, and adults based on PNERA data.	Cross-sectional study
10	OLIVEIRA, M. AND. B. IN; GARCIA, M. F., 2009.	<i>A luta pela terra e pela educação no assentamento rural do MST Zumbi Dos Palmares e no acampamento Pequena Vanessa, Mari, Paraíba</i>	To analyze the educational proposal of the MST and its relationship with the territorial formation of the Zumbi dos Palmares Settlement, located in the municipality of Mari in the region of Mata Paraibana.	Case study
11	SCOPINHO, R. A., 2010.	<i>Condições de vida e saúde do trabalhador em assentamento rural</i>	To reflect on how cooperative and self-managed work, in the city and in the countryside, can improve the living conditions and health of rural workers.	Field research
12	LIMA, A. L. F., 2014.	<i>A importância da soberania alimentar para a promoção da saúde nos assentamentos da reforma agrária</i>	Understand the nature of production and food relations in rural settlements.	Literature review
13	COSTA, M. G. S. G., 2014.	<i>Condições de vida, gênero e saúde mental entre trabalhadoras rurais assentadas</i>	To investigate the prevalence of common mental disorders (CMD) and possible factors related to the emergence of such disorders among women living in a rural settlement in Rio Grande do Norte.	Mixed approach ethnographic research

14	MOURA, C. et al. 2014.	<i>Autoavaliação da saúde bucal e fatores associados entre adultos em áreas de assentamento rural, Estado de Pernambuco, Brasil</i>	To estimate the prevalence of negative self-rated oral health and associated factors among adults in rural settlements.	Cross-sectional study
15	TARLAU, R., 2015.	Education of the countryside at a crossroads: rural social movements and national policy reform in Brazil	To analyze how a strategic alliance between the MST and the National Confederation of Agricultural Workers (<i>Confederação Nacional dos Trabalhadores na Agricultura [CONTAG]</i>) transformed the Ministry of Education's official approach to rural education.	Literature review
16	SILVA, G. THE. B.; PASSADOR, J. L., 2016.	<i>Educação do campo: Aproximações conceituais e evolução histórica no Brasil</i>	To analyze public policies for rural education in three historical periods.	Literature review
17	LEITE, J. F. et al. 2017.	<i>Condições de vida, saúde mental e gênero em contextos rurais: um estudo a partir de assentamentos de reforma agrária do Nordeste brasileiro</i>	To investigate the incidence of CMD in rural settlements in the states of Rio Grande do Norte and Piauí, as well as the implications of gender-related conditions in producing suffering among men and women over 18 years of age.	Field research
18	FERNANDES, BM; TARLAU, R., 2017.	<i>Razões para mudar o mundo: A educação do campo e a contribuição do PRONERA</i>	To analyze the National Program of Education in Agrarian Reform (PRONERA) and to discuss the paradigm of rural education.	Literature review
19	BARBOSA, L. P.. 2017.	Education for and by the countryside as a political project in the context of the struggle for land in Brazil	To assess how the MST understands education and the role of education in strengthening peasant resistance and intensifying the dispute between political projects for the countryside.	Literature review

20	DA SILVA, A. C. et al., 2017.	Patterns of tobacco consumption among residents of a rural settlement: a cross-sectional study	To investigate patterns of and factors associated with tobacco consumption among residents of a rural settlement.	Cross-sectional study
21	CONTE, I. I.; RIBEIRO, M., 2017.	Countryside School: Relationship between Skills, Knowledge and Cultures	To reflect on the relationship between school curriculum content and the experiences that result from agricultural work practices.	Case study
22	LIRA, P. v. R. DE A.; ALBUQUERQUE, P. Ç. Ç. IN; GURGEL, I. G D., 2018.	<i>Trabalho e estranhamento: a determinação social da saúde em assentamentos</i>	To understand how the work process of peasants in two settlements is influenced by two different factors, agribusiness and agroecology.	Multiple case study
23	DEAMORIM, T. F. et al., 2018.	Symptomatic Sexually Transmitted Infections in Brazil's Emerging Rural Populations	To estimate the prevalence of and risk behaviors associated with self-reported symptomatic sexually transmitted infections (STDs) in rural settlers in midwestern Brazil.	Cross-sectional study
24	RÜCKERT, B.; ARANHA, A. v. S., 2018.	Struggling for health is struggling for agrarian reform: a study on health practices within the Brazil's Landless Workers' Movement	To deepen knowledge about health experiences in areas of agrarian reform.	Case study
25	SANTOS, M., 2018.	Countryside education in the National Education Plan: tensions between guaranteeing and denying the right to education.	To discuss the right to education for rural populations and to analyze the guarantee of this right in the documents that have guided educational policy in Brazil in recent decades.	Literature review
26	DANTAS, A. Ç. M. T. V. et al., 2019.	<i>Relatos e reflexões sobre a atenção primária à saúde em assentamentos da reforma agrária</i>	To analyze the health care of families settled in the interior of the state of Pernambuco.	Case study

27	CAETANO, K. THE. A. et al., 2020.	Hepatotropic viruses (hepatitis A, B, C, D and E) in a rural Brazilian population: prevalence, genotypes, risk factors and vaccination	To estimate the prevalence of exposure to viral hepatitis in people living in rural settlements in central Brazil.	Field research
28	BATISTA, L. et al., 2020.	Anemia among children living in land reform colonization projects in the Northeast region of Brazil: a population-based cross-sectional study	To assess the prevalence of anemia and its social determinants among Brazilian children from rural settlements in the agrarian reform colonization projects in the city of Teresina, Northeastern Brazil.	Cross-sectional study
29	BOSS, A. C. et al., 2020.	<i>Reconhecendo as necessidades em saúde nos assentamentos dos municípios de Colômbia e Laranjeiras, Estado de São Paulo</i>	To investigate what rural populations living in the municipalities of Colômbia and Laranjeiras think about their health and the need for better health conditions.	Exploratory study
30	PERIN, T. CORTE, M., 2021.	<i>Educação do campo: Um contexto contra-hegemônico na história da educação brasileira</i>	To historically analyze the constitution of rural education as a teaching modality and its counter-hegemonic perspective.	Literature review

Table 3 presents quantitative characteristics of the studies included in the scoping review for year of publication, type of study, and topics related to health and education.

Table 3. Quantitative characteristics of the studies included in the review

Features	Categories	Number of studies (%)
Year of publication		
	1995- 2005	5 (16.7)
	2006 - 2015	10 (33.3)
	2016-2022	15 (50.0)
Type of study		
	Cross-sectional study	10 (33.3)
	Literature revision	8 (26.7)
	Case study	5 (16.7)
	Field research	3 (10.1)
	Ethnographic research	1 (3.3)
	Exploratory research	1 (3.3)
	Mixed approach	1 (3.3)
	Qualitative	1 (3.3)
Health		
	Sociocultural determinants	6 (30.0)
	Chronic, infectious, and parasitic diseases	4 (20.0)
	Nutritional status/dietary pattern	3 (15.0)
	Mental health	2 (10.0)
	Chronic diseases	2 (10.0)
	Oral health	1 (5.0)
	Use of psychoactive substances	1 (5.0)
	STDs	1 (5.0)
Education		
	Public policies in rural education	8 (80.0)
	Schooling indicators	2 (20.0)
Note: STDs: Sexually transmitted diseases.		

Half (50.0%) of the studies were published between 2016 and 2022. Most of the studies had a cross-sectional design (33%), followed by literature reviews (26.7%) and case studies (16.7%). Of the studies on health included in the review, 30.0% addressed issues related to sociocultural determinants, while 80% of the studies on education focused on aspects related to public policies in rural education.

Table 4 presents the main results of the studies included in the review, with a description of the health and education conditions identified in each study.

Table 4. Health and education conditions in rural settlements in Brazil

No.	Author / Year	Main results
01	BERGAMASSO, SMPP, 1997.	Education: (1) 39.4% of the settlers are illiterate/incomplete literacy; (2) 39.4% have incomplete elementary education; (3) 97.6% of settlers are outside of any study program. Health: (1) Only 1% of the settlers know they have diabetes; (2) an alarming epidemiological picture in settlements such as Rondônia and Bahia, with a high rate of infectious diseases such as malaria and verminoses.
02	VEIGA, G. v. BURLANDY, L. et al. 2001.	Health: (1) There was no prevalence of nutritional deficit among children aged 0 to 4.9 years; (2) there was a low prevalence of nutritional deficits among children aged 5 to 9.9 years; (3) 13.3% of adolescents are overweight; (4) despite exposure to risk factors, the low prevalence of nutritional deficit among settled children may be related to the presence of protective factors such as access to health services.
03	FERREIRA, P., et al., 2003.	Health: (1) Intestinal parasites and commensal organisms were present in 59.7% of children from settlements in Minas Gerais.
04	SILVA, R. A., et al., 2004.	Health: (1) 47.4% of settlement residents live in households with a prevalence of <i>Triatoma sordida</i> , the triatomine responsible for the transmission of Chagas disease; (2) In 79.2% of the houses where triatomine bugs (<i>Triatoma sordida</i>) were collected, 26.8% of the individuals were aware of the disease/vector; (3) 50.0% of the homes with positive triatomine bugs have people who do not know what to do if they find this insect in their homes.

05	CARNEIRO, F. F. et al. 2005.	Health: (1) According to the perception of most of the settled and encamped families, the Unified Health System (<i>Sistema Único de Saúde</i> [SUS]) did not meet their health needs mainly due to the difficulty in accessing services. For this group, their needs were met after demands and pressure from governments.
06	PRESTES-CARNEIRO, L. E. et al., 2006.	Health: The frequency of taeniasis-cysticercosis antibodies in the population in settlement areas is 5.6%, that is, higher than in other regions considered endemic in São Paulo.
07	SOARES, D., 2006.	Health: (1) Phytotherapy considers the economic situation and the possibility of taking advantage of dispersed knowledge put into practice in the family's private space; (2) there was an appreciation of the traditional knowledge present in the context of a settlement; (3) approaching the disease in relation to a broader set of environmental, cultural, and social factors allows us to approach collective health from its complexity, recognizing the social subject as a bearer of cultural values.
08	CAVALCANT; NOGUEIRA, 2008.	Health: (1) The collective social health practices in the Mártires de Abril Settlement (AMA) were built and dependent on historical aspects of life, the struggle of the MST], the concept of health-disease and its relationship with the land; (2) their actions express a form of care essentially guided by natural ways, proposing a new nursing model of health care.
09	DI PIERRO, MC; ANDRADE, MR, 2009.	Education: (1) 30% of the schools located in the city of São Paulo served rural settlements; (2) 50% of the schools that served the settlements were maintained by the municipal government, 40% by the state; (3) 44.6% of elementary schools had multigrade classes; (4) 51.5% of children aged between 4 and 6 years and 25% of adolescents aged 15 to 19 years do not attend school; (5) 17.4% and 30% of high school and technical students were over 19 years old, which is above the ideal age for attendance at this level and type of education. (6) Most of the people who made up the small group of settlers who attended higher education were over 25 years old; (7) 75% of young people and adults mostly attended federal agrotechnical schools or state public schools and 58.3% of them participated in the Young Entrepreneur Program.
10	OLIVEIRA, M. AND. B. IN; GARCIA, M. F., 2009.	Education: (1) Escola Zumbi dos Palmares, located in the municipality of Mari in the region of Mata Paraibana, is a school that sought to contribute to the training of student workers in the field and fought for its construction, proposing to overcome the challenges involved in the implementation of an education focused on the reality of its students.

11	SCOPINHO, R. A., 2010.	Health: (1) The contrast between the rural and urban way of life is a striking feature of the meaning of health-disease among rural settlers. The guarantee of health as a social right came up against the fragmented and disjointed way in which the public policies involved in agrarian reform were implemented by the state.
12	LIMA, A. L. F., 2014.	Health: (1) The production model based on polyculture and respect for the environment is essential for the man/nature balance; (2) the right to intervene in decision-making processes for the production and sale and consumption of food as a synthesis of economic and social relations is vital for the human development of settled families.
13	COSTA, M. G. S. G., 2014.	Health: (1) There was a prevalence of 43.6% of CMD among settlers; (2) the occurrence of CMD in women was associated with poverty, gender-based violence, and work overload.
14	MOURA, C. et al. 2014.	Health: (1) The prevalence of negative self-perception of oral health among adults in rural settlement areas was 70.5%; (2) negative self-assessment of oral health was more prevalent in younger individuals, individuals with low education, among women, and among black and mixed race individuals; (3) the predictors of negative self-rated oral health were skin color, self-reported need for dental treatment, and the impact of oral health conditions on quality of life.
15	TARLAU, R., 2015.	Education: (1) Social movements play a critical role in promoting national policy reform in Brazil; (2) the MST, through the movement's alliance with the National Confederation of Agricultural Workers (CONTAG) and other social actors, managed to publicly condemn the tendency to close rural schools and legitimize the idea that rural schools should have a differentiated education and convince the federal government to create dozens of new programs aimed at rural populations.
16	SILVA, G. THE. B.; PASSADOR, J. L., 2016.	Education: (1) Social movements played a large role in the development of the concept of "countryside education" and the strength of these movements drove a whole class of normative achievements.
17	LEITE, J. F. et al. 2017.	Health: (1) There is a higher incidence of CMD in women; (2) the incidence of CMD in women is related to lower income and low education; (3) for women, mental suffering is associated with overload of housework, gender-based violence, and everyday stressors; (4) for men, mental suffering is associated with work overload in agriculture, the onset of illness, and loss of physical vitality.

18	FERNANDES, BM; TARLAU, R., 2017.	Education: (1) The Brazilian peasantry, with emphasis on the MST, together with teachers and researchers built the paradigm of rural education that has been one of the main references in the National Program of Education in Agrarian Reform (PRONERA); (2) the contribution of PRONERA, in its 20 years of existence, has ensured this public policy as fundamental for peasant education.
19	BARBOSA, L. P., 2017.	Education: (1) Latin American and Brazilian rural social movements believe that significant social transformation requires the collective construction of a political project of a historical character; (2) education is conceived as a historical-cultural and political project to transform the peasantry into a historical subject through an emancipatory educational-pedagogical praxis; (3) the MST is the most emblematic peasant movement in Brazil that has played a leading role in peasant education.
20	DA SILVA, A. C. et al., 2017.	Health: (1) The prevalence of lifetime tobacco use, current use, tobacco abuse, and high risk of nicotine dependence were 62.2%, 20.9%, 59.8%, and 10.3%, respectively; (2) advanced age, low education, evangelical religion, use of marijuana, consumption of hypnotics or sedatives, and male sex were factors associated with the smoking habit among the settlers.
21	CONTE, I. I.; RIBEIRO, M., 2017.	Education: (1) The education of a rural school in Mato Grosso managed to relate the contents of the areas of knowledge with the cultures and life and work experiences of the communities where the research subjects lived; (2) belonging to the countryside refers to the universe of work, religious devotion, and family celebrations/fraternization; therefore, rural education must be articulated to these references.
22	LIRA, P. v. R. DE A.; ALBUQUERQUE, P. Ç. Ç. IN; GURGEL, I. g. D., 2018.	Health: (1) Labor relations, to the detriment of agribusiness, presents itself in a specialized production, almost exclusively of goods and with intensive use of pesticides; (2) work relationships influenced by agroecology present a diversified production, abolishing the use of pesticides and with less intensity at work; (2) the relationship between the health-disease process and work in the settlements studied is determined according to the form of (re)production of the settlers in articulation with society; (3) the material relations of work production are decisive in the way settlers get sick and die.
23	DEAMORIM, T. F. et al., 2018.	Health: (1) A prevalence of 22.4% of self-reported symptomatic STDs was found in individuals who lived in settlements; (2) being female, homosexual, or having lived in camps were associated with self-reported STDs.

24	RÜCKERT, B.; ARANHA, A. v. S., 2018.	Health: (1) The establishment of new health norms involves the political organization of agrarian reform settlements and encampments; (2) the incorporation of the MST health project/ heritage proved to be more effective as it reached the collectives; (3) the practices identified that showed values consistent with the struggle for agrarian reform were ecological agriculture and teaching work that involved health, environment, and care actions.
25	SANTOS, M., 2018.	Education: (1) There were advances in the National Education Plan (2014) in relation to previous plans, not presenting, however, significant achievements with regard to rural education; (2) there is a long way to go before it can be said that Brazil guarantees the right to education for the peasant population.
26	DANTAS, A. Ç. M T. V. et al., 2019.	Health: (1) Health practices were related to popular care through the use of medicinal plants and preventive actions such as vaccination, childcare, monitoring of hypertensive and diabetic patients, water treatment, and garbage disposal; (2) socioeconomic, cultural and educational factors had a negative impact on the health condition, while the training of professionals and the problem-solving capacity of primary care limited the offer of actions; (3) although health practices were in accordance with the National Primary Care Policy, there were gaps between technical health care and popular health care; (4) the actions carried out by the MST were highlighted, such as the diagnosis of health conditions and planning, based on popular education; (5) the health needs presented by the families demanded specific competences and skills from the teams for the integral health care involved with the socioeconomic, cultural, and sanitary reality of the agrarian reform settlements.
27	CAETANO, K. THE. A. et al., 2020.	Health: (1) 85.9%, 3.9%, 0.4%, and 17.3% of individuals showed evidence of exposure to hepatitis virus, hepatitis E virus, hepatitis C, and hepatitis B, respectively.
28	BATISTA, L. et al., 2020.	Health: (1) The prevalence of anemia decreased by 39% for each year of the child's age (PR = 0.61; 95% CI = 0.50 – 0.74), 14% for each year of maternal schooling (PR = 0.86; 95% CI = 0.79 – 0.94) and 6% for each year of maternal age (PR = 0.94; 95% CI = 0.89 – 1.00); (2) children who lived in mud masonry houses or unfinished houses had a higher prevalence of anemia than those who lived in finished masonry houses (PR = 2.73; 95% CI = 1.50 – 4.97); (3) anemia is a moderate public health problem in rural agrarian reform settlements in Teresina and is likely a health problem in other agrarian reform colonization projects in Brazil and worldwide.

29	BOSS, A. C. et al., 2020.	Health: (1) Health is understood by rural populations as a health-disease process, based on the biomedical model; (2) there is a scarcity of resources that can improve living conditions in the settlements, with a greater need for transport or infrastructure and greater financing of health care; (3) more than half of the rural population reported not being able to change the situation in their communities; (4) the health care structure of rural populations is overloaded by the excess of consultations, diagnostic tests, and medication supply.
30	PERIN, T. CORTE, M., 2021.	Education: (1) The constitution of rural education, with specific legal frameworks, is the result of a long and arduous process of confrontations with the constituting institutions of the state and national society, forged by the struggles of peasant social movements, against the current socio-educational hegemony; (2) rural education has been constituted in schools in the settlement areas of the agrarian reform in Brazil.

4. Discussion

This scope review identified that rural settlers living in Brazil had high rates of infectious and chronic diseases, in addition to having restricted access to health services and hydro-sanitary security in the settlements, mainly in the north and northeast regions of Brazil. The settlers have high burdens of common mental disorders, especially among women who deal with domestic work, violence and everyday stress. As for access to education, difficulties for education at different levels predominate, especially in early childhood education and higher education. The discontinuity of studies and high rates of illiteracy and functional illiteracy are worrying characteristics among rural youth, as well as access to quality rural education.

Health conditions in rural settlements in Brazil

According to Bergamasso (1997), the first agrarian reform census held in Brazil in 1997 showed that public health services in rural settlements in Brazil were precarious. Only 1% of the settlers

knew they had diabetes, there was a high prevalence of infectious and parasitic diseases, with alarming data in some states such as Rondônia and Bahia (BERGAMASSO, 1997). The most common diseases among the settlers were influenza (32%), worms (14%), and diarrhea (9.9%) (SOARES, 2006). The quality of basic health services in rural settlements until the mid-1990s was worrying, since the existence of hospitals, health posts, and health agents within the settlements was restricted, with greater availability only in the municipalities (FERREIRA et al., 2003; SILVA et al., 2004; SOARES, 2006; VEIGA; BURLANDY, 2001).

The 1997 census also showed that many settlers did not have access to minimum hydro-sanitary safety conditions, especially in the North and Northeast regions of Brazil, where access to piped water is lower than in other regions of the country. The main sources of water supply in the settlements include wells (46.07%), streams (14.17%), and waterholes (13.02%) (SOARES, 2006). Regarding other health indicators, it is important to highlight that a low rate of settlers living in canvas tents or temporary housing was identified, with houses predominantly made of wood (31.90%), mud (28.20%), or masonry (22.99%) (SOARES, 2006). In addition, there are significant regional differences in the distribution of energy sources, with a higher prevalence of access to electricity in the South and Southeast regions of Brazil, while in the other regions the use of kerosene and diesel oil prevails (SOARES, 2006).

Cavalcante and Nogueira (2008) found that a rural settlement located in the state of Pará already had specific routines of health practices in the settlement. Several activities were identified, such as home visits by community health agents, and the production and use of home remedies and health education through the Family Health Program (*Programa Saúde da Família* [PSF]) (CAVALCANTE; NOGUEIRA, 2008). In this context, there was a tendency to value alternative medicine and the principles established by the MST for the promotion of health, which value respect for local realities and particularities of the settlements, opposing the curativism rooted in the practices of the Unified Health System (SUS) (CAVALCANTE; NOGUEIRA, 2008). From this perspective, other studies also

defend the need for comprehensive health practices that are committed to the socioeconomic, cultural, and health reality of the agrarian reform settlements (CARNEIRO et al., 2005; DANTAS et al., 2019; PRESTES-CARNEIRO et al., 2006).

According to Scopinho (2010), one of the most striking features that refers to the meaning of health-disease attributed by rural workers is expressed in the contradiction between the rural and urban way of life. Thus, there is an emphasis on aspects related to the quality of food and work and the character of social and interpersonal relationships. After interviewing workers in a rural settlement, Scopinho (2010) states that they considered that life in the settlement favored healthy living habits, such as access to basic foods free of pesticides, hormones, or other chemicals. The barter economy, commonly adopted in the settlements, was also an aspect considered by rural workers, as it guaranteed self-sustainability and the modification of typically urban consumption habits (SCOPINHO, 2010).

For Lima (2014), healthy eating practices in the context of the development of rural settlements are intrinsically linked to the way of life of farmers. It is noted that the concept of food for men and women in the countryside represents a higher value compared to city dwellers (LIMA, 2014). Autonomy in food production, even in the face of scarcity of resources, is a determining factor in the health of settled families, since it contributes to the richness of diversity in agricultural production, to dignified living conditions, and full human development (LIMA, 2014).

The living and health conditions of the settled families are directly affected by the growing subordination of rural work to agro-industry and the capitalist mode of production (LIRA; ALBUQUERQUE; GURGEL, 2018). This tendency is discussed by Lira, Albuquerque, and Gurgel (2018), who claim that work relationships in the settlements are based on family work (agroecological practices), but there are situations where production in the settlement can be associated with production for sale (agribusiness) (LIRA; ALBUQUERQUE; GURGEL, 2018). Thus, agriculture influenced by agribusiness tends to suppress the

independence of peasant production, favors the use of pesticides and, consequently, contributes to the illness of workers and settled families (LIRA; ALBUQUERQUE; GURGEL, 2018).

Other aspects of the health of settlers were analyzed recently, such as the use of drugs, alcohol, cases of arterial hypertension, diabetes, leisure practices, physical activity, vaccination, STDs, and health care (BOSSO et al., 2020; DE AMORIM et al., 2018; MOURA et al., 2014; SILVA et al., 2017). One survey showed that about 75.9% to 86.7% of the settlers do not use tobacco, 82% to 96% do not use alcohol, and 82.8% to 91.3% do not use other drugs (BOSSO et al., 2020). The prevalence of chronic diseases ranged from 20.7% to 60.7%, the prevalence of diabetes was approximately 5%, while 71.4% of the settlers practiced leisure activities strictly at home (BOSSO et al., 2020). The practice of physical activity by the settlers happens, in great majority, during work activity in the field and the settled families stated that they face difficulties to take care of their own health, such as transportation, slow health services, financial difficulties, and access to medications (BOSSO et al., 2020).

Other studies addressed the mental health of families and settled workers. One study identified a prevalence of 43.6% of common mental disorders (CMD) among settled women (COSTA, 2014). This high prevalence was associated with poverty, gender-based violence, and work overload (COSTA, 2014). Another study with men and women showed a prevalence of approximately 15% of CMD among the settlers, with a higher risk among women, low-income individuals, and low-educational individuals (LEITE et al., 2017). Among women, mental suffering was associated with overload of housework, violence, and everyday stress. Among men, work overload in agriculture, the onset of diseases, and loss of physical vitality stand out as factors that negatively impact mental health (LEITE et al., 2017).

Finally, several studies confirm the multidimensional aspects that refer to the health of settled families and determine the quality of life and sustainability in rural settlements (BATISTA et al., 2020; CAETANO et al., 2019; RÜCKERT; ARANHA, 2018). These

aspects range from ensuring access to health services, leisure, and physical activity to valuing the socioeconomic context, culture, and values inherent to rural people. Families and settled workers face several other difficulties in accessing goods and services such as transport, basic sanitation, and financial difficulties. All these factors accentuate the vulnerability of the settled population. In light of this, interventions and public policies must be directed to expand access to health services in the settlements and autonomy in the relations between work and production.

Education conditions in rural settlements in Brazil.

Until 1997, 39.4% of people in rural settlements throughout Brazil were illiterate or semi-literate and 97.6% were outside of any study program (BERGAMASSO, 1997). During this period, discussions about education focused on the rural reality were severely neglected, with a clear omission on the part of the federal government regarding the implementation of programs for the eradication of illiteracy in Brazil (BERGAMASSO, 1997). In 2004, this trend was still confirmed, since the majority of the student population in the settlements attended schools in the urban area (DI PIERRO; ANDRADE, 2009). In São Paulo, for example, only 30% of the settlements were served by rural schools (DI PIERRO; ANDRADE, 2009).

A study carried out in rural settlements in the state of São Paulo, based on the National Research on Education in Agrarian Reform (*Pesquisa Nacional Sobre a Educação na Reforma Agrária [PNERA]*), showed that there are difficulties in accessing early childhood education and that one quarter of young people between 15 and 19 years old were out of school (DI PIERRO; ANDRADE, 2009). A total of 75% of young people and adults attended federal or state agrotechnical schools. The trajectory of the students showed a discontinuation of studies, with a small group of people (2%) who attended higher education (DI PIERRO; ANDRADE, 2009). Of the young and adult population, 12% were completely illiterate

and 40% were classified as functionally illiterate, as they had a maximum of four years of study (DI PIERRO; ANDRADE, 2009).

According to Di Pierro and Andrade (2009), until the first decade of the 2000s, public policies for the democratization of education in rural settlements favored the provision of school transport for students from rural areas to urban areas to the detriment of schooling in rural areas (DI PIERRO; ANDRADE, 2009). The school supply, specifically in the settlements of São Paulo, was only significant in the initial grades or cycles of elementary education (DI PIERRO; ANDRADE, 2009). In general, schooling in the settlements was deficient at all school levels and modalities, from early childhood education to higher education, including special, professional, and youth and adult education. For Di Pierro and Andrade (2009, p. 255), the teaching modalities offered "do not contribute to the training of human resources prepared for sustainable rural development and for the maintenance of the sociocultural identity of rural youth, encouraging the rural exodus".

In this regard, the MST had already assumed, in 1987, the task of creating an education sector within the MST (OLIVEIRA; GARCÍA, 2009). The MST defended the need for each camp and settlement to have a school with specific projects for rural education (OLIVEIRA; GARCÍA, 2009). The movement for rural education presents the need to listen to and understand the social, cultural, and educational dynamics of the different groups that form the rural people (BARBOSA, 2017; CONTE; RIBEIRO, 2017; OLIVEIRA; GARCÍA, 2009; SANTOS, 2018; SILVA; PASSADOR, 2016). Oliveira and Garcia (2009, p. 165) claim that:

Rural education is born above all from a look at the role of the countryside in a country development project and at the different subjects of the countryside. A view that considers the countryside as a space for the democratization of Brazilian society and social inclusion, and that considers its subjects as having history and rights; as collective subjects that are socially, culturally, ethically, and politically formed.

The Municipal School Zumbi dos Palmares, located in Paraíba, is a good example of a school born in the context of social struggles for a rural school (OLIVEIRA; GARCÍA, 2009). Created with the support of the MST, the school faced several challenges to its implementation within a rural settlement, such as the absence of a "pedagogy of the movement", structural difficulties, and human resources for teaching work and the reduced financial investment by the teachers, municipalities, and governments (OLIVEIRA; GARCÍA, 2009).

Rural education only becomes legitimately consolidated from 2009 onwards, with its institutionalization through the National Program of Education in Agrarian Reform (PRONERA), Law No. 11,497 (FERNANDES; TARLAU, 2017). PRONERA contributed to strengthening peasant identity through access to education at all levels (FERNANDES; TARLAU, 2017). This policy expanded rural education throughout Brazil and a diversity of courses was created, such as law, agronomy, pedagogy, geography, and veterinary science, among others (FERNANDES; TARLAU, 2017).

In the 37 years of the MST's existence, more than 4,000 schools were built in camps and settlements in Brazil, guaranteeing access to education for around 200,000 children, adolescents, youth, and adults, as well as 50,000 literate adults, 2,000 students in technical and higher courses in more than 100 undergraduate courses in partnership with public universities across the country (PERIN; CORTE, 2021). Currently, Brazil has 4,466 public schools in settlement areas, with the highest number in the Northeast Region and the lowest number in the southern regions of the country (PERIN; CORTE, 2021).

The data showed that access to education in rural settlements directly depends on public policies for the democratization of education at all levels of education (BARBOSA, 2017; SILVA; PASSADOR, 2016; TARLAU, 2015). Significant advances were observed from the implementation of PRONERA, which effectively contributed to expand the access of children and young people to rural education throughout Brazil, especially in the Northeast Region. However, the maintenance and continuous evaluation of so-

cial programs is essential in order to establish new goals and strategies for the democratization of education among settled families.

Based on the results of this review, it is recommended that further studies be conducted to establish an in-depth and current analysis of indicators that refer to health and education in rural settlements. New research will be able to identify the advances and setbacks of public policies, with these achievements arising from the hard struggle of rural workers. It is noticed that the health and education conditions of the settled families are a reflection of a fragmented society, where the implementation of public policies in the field of education and health has always been conflicting. Although government programs are limited in solving, in their entirety, the social and economic problems of the settled families, they are the starting point for reducing the socioeconomic inequalities that place this group among the vulnerable populations. In this way, the full human development of settled families depends directly on integrated actions in health and education.

4. Conclusion

The health and education conditions of families and settled workers are marked by a history of negligence and precariousness on the part of the public authorities. Rural social movements in search of rights were fundamental for the consolidation of public policies to expand health and education services in the settlements. The improvement of the education conditions of the settled families is due mainly to the constitution of Educação do Campo and PRONERA. Therefore, the democratization of access to health and education services in rural settlements depends on public policies that focus on valuing the socioeconomic, cultural, and educational context of rural people. These actions must be guaranteed with the implementation and maintenance of social programs that guarantee access to basic sanitation, health services, transportation and quality education at different levels, through investments and maintenance of human and financial resources.

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