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Vulnerability associated with sexually transmitted infections in physically disabled people

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Abstract *Objective: to analyze the conditions that enhance the dimensions of individual, social and programmatic vulnerability associated with sexually transmitted infections in physically disabled people. Methods: this transversal study, with a quantitative approach, was conducted in 2015 in conjunction with an association for disabled people in Campina Grande, PB, Brazil. Ninety-eight individuals participated in the study and answered a questionnaire regarding the dimensions of vulnerability in relation to sexually transmitted infections. The chi-square test, Fisher's test, contingency coefficient test and prevalence ratio test were all performed. Results: an association was identified between the occurrence of sexually transmitted infections with the number of partners (p = 0.020); the belief that having few partners was a form of prevention (p = 0.044); the belief that poor hygiene was a risk factor; age (p = 0.007); the type of disability (p = 0.007); and having a consultation with a urologist (p = 0.030). Conclusion: physically disabled people have conditions that enhance their vulnerability to sexually transmitted infections, which are linked to individual, social and programmatic dimensions. By characterizing the conditions of vulnerability it is possible to devise specific prevention linked to the reality of the social and health conditions of individuals.*

Key words *Disabled people, Sexuality, Sexually transmitted infections, Health vulnerability*

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Introduction

Despite changes that have occurred in the epidemiological profile worldwide, such as the rise of chronic non-communicable diseases (NCDs) and a decrease in infectious diseases, the latter still constitute a serious public health problem. In terms of sexually transmitted infections (STIs), it is known that the control of the incidence and prevalence of HIV/AIDS is still incomplete and initiatives for prevention and treatment have only been partially successful[1].

With respect to reducing the incidence of STIs, which still constitute a global epidemic, health practices are required which involve not only individual aspects but also actions that can influence the social, economic and cultural aspects of individuals who are infected, those who have an infection and/or disease, and those who are in vulnerable situations[2].

According to the World Health Organization (WHO), each year, 340 million people worldwide are affected by some kind of STI[3]. Because of the complications caused by STIs, and particularly because of the risk of facilitating the transmission of HIV, increased attention is required regarding prevention in order to avoid the development of new cases, or that existing cases become more acute. In order that levels of prevention can be effective it is necessary to know more about the vulnerable conditions that contribute to the onset of diseases and other health problems[4].

Vulnerability and risk can often be linked to notions of deprivation and exclusion. Some people, families and communities are vulnerable because they lack the necessary resources to face the risks that are undergoing or the capacity to adopt actions and strategies that afford them an appropriate range of personal and collective safety[5].

The concept of vulnerability refers to the susceptibility of an individual who is exposed to illness. It incorporates aspects of what are termed "dimensions of individual vulnerability", which comprise the following: the biological and cognitive aspects of individuals; the attitudes of individuals; social vulnerability, including social, cultural and economic factors; and programmatic vulnerability, which refers to the resources that are necessary for the protection and quality of life of individuals[6].

Disabled people constantly live in situations that can expose them to increased vulnerability[7]. According to the WHO, about one billion people worldwide have some kind of disability. These people face difficulties related to accessibility due to inadequate buildings and transport without appropriate adaptations, which reflects attitudes that are rooted in prejudice and discrimination, as well as problems in terms of healthcare. Failures to provide skilled care for this sector of the community have been highlighted[8].

In Brazil, 45.6 million have reported some form of disability; of this total there were 13,265,599 cases of physical disability. The state of Paraíba is second in the ranking of the number of disabled people among the federal states in Brazil. Thus, this reflects a demand that needs to be targeted by public health policies[9]. In terms of data regarding physically disabled people with STIs it is known that in Brazil, 38% of women and 35% of men have had some form of STI[10].

Concerning the sexuality of physically disabled people, they usually suffer from social prejudices that consider they do not date, don't have sex, do not marry, cannot have children and that they are not raped[11]. This misrepresentation about the sexuality of physically disabled people not only contributes to the discrimination process but also increases their vulnerability in relation to situations related to STIs[12].

Studies have shown that physically disabled people face difficulties in accessing health services due to architectural problems, as well as difficulties in using public transport, and the lack of materials and equipment to facilitate their participation in educational, professional, cultural and social environments[11,13]. Furthermore, these individuals frequently have a low income, poor education, and little professional training; consequently, most are unemployed, and all these factors undermine their human and social development, as well as increasing their vulnerability[14,15].

The present study can help to contribute to preventing STIs in physically disabled people; by characterizing their vulnerability it is possible to trace a specific form of prevention that is linked to the reality of the social and health conditions of individuals. In addition, this study can help to define new actions and programs that can be developed to focus on the health of physically disabled people. This study can also help health professionals in terms of guidance regarding planning related to preventive actions and the quality of healthcare of these people. Moreover, in Brazil the issue of physically disabled people forms part of the National Agenda for Research Priorities in Health.

Thus, considering the various factors that can expose physically disabled people to STIs, this study analyzed the conditions that enhance the

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dimensions of individual, social and programmatic vulnerability that are associated with sexually transmitted infections in physically disabled people.

Method

This analytical study, with a transversal design and quantitative approach, took place from April 2014 to November 2015 under the auspices of the Borborema Association of Disabled People (ASDECB) in Campina Grande, PB, Brazil.

The ASDECB was founded in 2003 and is a non-governmental, civil, non-profit organization with its own legal definition. It is intended to be a representative, campaigning, educational and social organization. It has 335 members in the city of Campina Grande, who are of different ages and all of whom have some form of disability.

The study participants consisted of 130 people with physical disabilities, who were duly registered and attending activities administered by the ASDECB. To estimate the sample size, so that it should be representative of the aforementioned population, the following formula was used: $n = N. Z^2. P(1-P) / (N-1). e^2 + Z^2. P(1-P)$, where: n = sample value; N = population value; Z = confidence interval = 1.96; P = prevalence = 50%; e = tolerated error = 0.05. Thus, using a probabilistic sampling process with a simple random technique to select participants, the sample consisted of 98 physically disabled people. The people who participated in the study were aged 18-59, had a physical disability, and attended activities organized by the ASDECB. People were excluded from the study if they had another type of disability that was not physical in nature.

The data was collected through an interview with a structured questionnaire. To collect the data for the questionnaire a home visit was conducted. The first contact was arranged through the ASDECB, who signed the institutional agreement term. After the participants were selected at random, a home visit was conducted in order to present the informed consent form and to ensure that the individual agreed to participate in the study. The form was duly completed.

The variables regarding the dimensions of vulnerability were in accordance with a study by Ayres[6] and were as follows: 1. *Individual dimension of vulnerability* - a) Cognitive - access to information; knowledge about risk factors; knowledge about attitudes regarding the prevention of STIs; thinking about the risk of contracting an STI; b) Behavioral – history of drug use; history of sexual relations; age of onset of sexual relations; number of partners in life; frequency of condom use; blood transfusion; STI history; sharing of intimate objects. 2. *Social dimension of vulnerability* - age; gender; income; education; religion, marital status, type of work and type of disability. 3. *Programmatic dimension of vulnerability* - access to healthcare services; type of service used most frequently; frequency of medical appointments (gynecologist/urologist); guidance by health professionals guidance regarding the prevention of STIs.

The collected data were entered in an electronic database and analyzed using the Statistical Package for Social Sciences (SPSS), version 22.0 for Windows, and then presented in tables. Descriptive statistics were used for the analysis of the socio-demographic data, and the absolute and relative frequency, mean and standard deviation were calculated. The chi-square test (X^2) was used to verify the associations between the variables, except when the statistical requirement of no less than five cases was not met; in that case Fisher's exact test was performed. The prevalence ratio and the respective confidence interval were calculated. The level of significance for the study was 5%.

To check the magnitude of the association between the variables, the contingency coefficient test was used with the following parameters: $r \geq 0.750$ = strong association; 0.500-0.749 = moderate association; ≤ 0.499 = weak association)[16].

All the criteria established by Resolution 466/2012 of the National Health Council were respected. Thus, the study participants were informed about the research and they signed an informed consent form that ensured their rights of privacy, confidentiality and the right to decline to participate in the study. The project was submitted to the Research Ethics Committee (REC) of the State University of Paraíba (UEPB) and it was approved by CAAE.

Results

Socio-demographic profile

Table 1 shows that majority of the individuals were male (with a ratio of 1.4 men to each woman); had religious beliefs (98.9%); had up to secondary education incomplete (65.3%); were unmarried (57.2%); had an income of up to one minimum wage (87.7%) and were unemployed

Table 1. Socio-demographic aspects of physically disabled people, Borborema Association of Disabled People (ASDECB), Campina Grande, PB, Brazil, 2015.

Variables	n	%
Gender		
Male	57	58.2
Female	41	41.8
Age		
18 - 31	15	15.3
32 - 45	44	44.9
46 - 59	39	39.8
Religion		
Catholic	61	62.1
Evangelical	32	32.6
Other	3	3.1
Kardecist	1	1.1
No religion	1	1.1
Education		
Illiterate	4	4.1
Did not complete primary education	37	37.8
Completed primary education	7	7.1
Did not complete secondary education	16	16.3
Completed secondary education	26	26.5
Did not complete higher education	4	4.1
Completed higher education	4	4.1
Married status		
Single	43	43.9
Married	30	30.6
Common-law marriage	12	12.2
Divorced	11	11.2
Widower	2	2.1
Renda per capita		
< 1 minimum wage*	16	16.3
1 minimum wage	70	71.4
2-5 minimum wages	12	12.3
Working		
Yes	40	40.8
No	58	59.2
Type of link/benefit		
State benefit	45	45.9
Registered employment	30	30.6
Self-employed	9	9.2
Retired	4	4.1
Temporary contract	1	1.1
Type of disability		
Congenital	16	16.3
Acquired	82	83.7

Source: research data. n = 98; * minimum wage = R$: 788.00 per month.

(59.2%). The largest percentage received welfare assistance (50%), which was mainly granted in respect of their acquired deficiency (83.7%). The average age was 42.28 (± 9.25; X_{min} = 20; X_{max} = 59).

Frequency of sexual relations and STIs

Table 2 shows the data regarding sexual practices, the occurrence of STIs and the type of disease.

Associations with the individual dimension of vulnerability

Table 3 shows the association between the occurrence of STIs with the number of sexual partners (p = 0.020), the belief that having few partners was a form of prevention (p = 0.044), and the belief that poor hygiene was a risk factor. A number less than 10 partners was set as a protective factor.

Associations with the social dimension of vulnerability

There were associations between the occurrence of STIs and age (p = 0.007) as well as the type of deficiency (p = 0.007). Participants with a congenital deficiency were 3.42 times more likely to have had an STI compared to individuals who had acquired a disability during their lifetime (Table 4).

Associations with the programmatic dimension of vulnerability

Table 5 shows that there was an association between the occurrence of STIs and having had a consultation with an urologist (p = 0.030).

Discussion

Research about socio-demographic aspects and the identification of most males aged 32-45 in Brazil diverges regarding physical disability because the IBGE estimates indicate that the majority are female and aged over 45[9]. It is believed that this fact is linked with the main objective of the ASDECB, which is the defense of social rights, especially in relation to labor, demonstrating that in Latin American societies, young adult males are, in general, still considered to be the financial breadwinner and the family member who is most likely to work outside the home[17]. The majority of those seek to join this type of institution are young males.

With regard to marital status and educational level, the present study corroborated previous similar studies. A transversal study, with 120 par-

Table 2. Frequency of sexual relations and sexually transmitted infections in physically disabled people. Borborema Association of Disabled People (ASDECB), Campina Grande, PB, Brazil, 2015.

Frequency	n	%
Sexual Relations		
Present	90	91.8
Absent	8	8.2
STI		
Yes	15	15.3
No	83	84.7
Type of STI		
Gonorrhea	4	26.6
HPV	2	13.3
Trichomoniasis	1	6.7
Vaginal herpes	1	6.7
Candidiasis	1	6.7
Syphilis	1	6.7
Unidentified	5	33.3

Source: research data; STI = sexually transmitted infection.

ticipants, which was conducted in the city of João Pessoa, PB, Brazil, found that 62.4% of participants lived without a partner and 63.3% did not complete primary school[18]. Another study, which involved young men from all over Brazil, highlighted the link between low levels of education and a lack of knowledge about STIs; it indicated the need for educational activities aimed at reducing this situation of vulnerability[19].

With regard to religious belief, the fact that most respondents in the present study reported that they attended some form of religious organization was significant because values and beliefs, including religion, form elements that can interfere with the perception of vulnerability to STIs, particularly in relation to the adoption of safe sex methods, such as the use of condoms, as well as values related to marriage and the number of sexual partners[20].

Concerning the occupational characteristics in relation to labor that were identified in the present study, it was noted that even though there exists legislation designed to ensure the right of inclusion of physically disabled people in the labor market, this social segment still does not enjoy equality of opportunity in this respect. There are still difficulties regarding the social inclusion of physically disabled people in the labor market[21]. Moreover, the challenge remains to ensure that, in addition to entering the labor market, physically disabled people have the correct conditions to perform their functions within their abilities and skills at their disposal. Therefore, it is important to emphasize that, over and beyond material and logistical factors, it is necessary to confront attitudes towards physically disabled people that are shaped by prejudice and discrimination[11].

The notable evidence of sexual relations identified in this study shows that it is important that there is a re-thinking of the erroneous notion in Brazilian society that assigns or restricts sexuality to merely able-bodied physical aspects. From this perspective, the myth that physically disabled people do not exercise their sexuality generates a lack of information and this is a conditional factor of vulnerability[19] because the degree of quality of information that individuals possess can increase or decrease their vulnerability to STIs, which can translate into unsatisfactory practices or attitudes[22].

According to Ayres, the conditions that enhance the vulnerability of individuals are comprised of a triad of behavior, consciousness and vulnerability; the degree of consciousness of the individual influences their behavior, which in turn influences their vulnerability[6]. In the present study, this was evidenced by the associations between cognitive and behavioral characteristics and the occurrence of STIs. The belief that poor hygiene is a risk factor (which is correct) occurred more frequently in people who had had an STI, which indicates that individuals have received the relevant information but that their actions are not always consistent with their knowledge. A study that was conducted with physically disabled people in the Brazilian state of Ceará, identified their limitations in performing daily activities such as taking care of personal hygiene[23]. Thus, regarding people with some kind of physical disability, a care plan is necessary to link the family to identify the most effective practices in terms of assisting in the development of self-care[24].

Another situation similar to that which was previously mentioned is the fact that in the present study, people who believed that having few sexual partners was a form of prevention had mainly had more than one sexual partner; factors that were associated with the occurrence of STIs. Since this was a transversal study, with no monitoring of individuals, knowledge about the risk of multiple factors may have occurred subsequently. A study of young people with disabilities in Ethiopia found high levels of sexual activity among young people with physical disabilities and risky

Table 3. Associations between the individual dimension of vulnerability and the occurrence of STIs in physically disabled people. Borborema Association of Disabled People (ASDECB), Campina Grande, PB, Brazil, 2015.

Individual dimension of vulnerability	Occurrence of STIs						
	Yes		No		p	PR CI	c
	n	%	n	%			
Knowledge about STIs							
Yes	15	15.5	82	84.5			
No	0	0	1	100			
Knowledge about RF							
Yes	11	14.3	66	85.7	0.405*		
No	4	19	17	81			
Belief in poor hygiene as a RF							
Yes	3	60	2	40	**0.025***		0.277
No	12	12.9	81	87.1		4.65 (1.91-11.3)	
Knowledge about prevention							
Yes	15	16.3	77	83.7			
No	0	0	6	100			
Belief in having few partners as a form of prevention							
Yes	4	40	6	60	**0.044***		0.225
No	11	12.5	77	87.5		3.20 (1.25-8.18)	
Sexual relations							
Yes	15	16.7	75	83.3			
No	0	0	8	100			
Age of first sexual experience							
≤ 18	10	15.6	54	84.4	0.569*		
> 18	4	16.7	20	83.3			
Number of partners							
≤ 10	8	11.3	63	88.7	**0.020**		
>10	5	35.7	9	64.3			
Use of condoms							
Yes	6	13.3	39	86.7	0.396		
No	9	20	36	80			
Hygiene after sexual relations							
Yes	15	17.9	69	82.1			
No	0	0	5	100			
Sharing intimate objects							
Yes	14	18.7	61	81.3	0.094*		
No	1	4,5	21	95.5			
Family history of STIs							
Yes	3	18.8	13	81.2	0.707*		
No	12	14.6	70	85.4			
Professional guidance about STIs							
Yes	8	16.3	41	83.7	0.779		
No	7	14,3	42	85.7			
Drug use							
Yes	1	14.3	6	85.7	0.709*		
No	14	15.4	77	84.6			
Alcohol use							
Yes	6	23.1	20	76.9	0.199		
No	9	12.5	63	87.5			
Blood transfusion							
Yes	2	8	23	92	0.231*		
No	12	16.9	59	83.1			

Source: research data; PR = prevalence ratio; CI = confidence interval (95%); c = contingency coefficient; RF = risk factor.
*using Fisher's exact test.

Table 4. Associations between the social dimension of vulnerability and the occurrence of STIs in physically disabled people. Borborema Association of Disabled People (ASDECB), Campina Grande, PB, Brazil, 2015.

Social dimension of vulnerability	Occurrence of STIs				p	PR CI	c
	Yes		No				
	n	%	n	%			
Gender							
Male	9	15.8	48	84.2	0.875		
Female	6	14.6	35	85.4			
Age					**0.007***		
≤ 42	2	4.5	42	95.5		0.18 (0.04-0.79)	0.260
> 42	13	24.1	41	75.9			
Religion					0.779		
Catholic	10	16.4	51	83.6			
Non-Catholic	5	13.5	32	86.5			
Education					0.646*		
≤ 10 years	14	15.6	76	84.4			
> 10 years	1	12.5	7	87.5			
Marital status					0.746		
With a partner	7	16.7	35	83.3			
Without a partner	8	14.3	48	85.7			
Income					0.583*		
≤ 1 minimum wage	13	15.1	73	84.9			
> 1 minimum wage	2	16.7	10	83.3			
Working					0.944		
Yes	6	15	34	85			
No	9	15.5	49	84.5			
Type of link/benefit					0.846		
Pension	8	16	42	84			
Remuneration	7	14.6	41	85.4			
Type of deficiency					**0.007**		
Congenital	6	37.5	10	62.5		3.42 (1.41-8.26)	0.310
Acquired	9	10.9	73	89.1			

Source: research data; PR = prevalence ratio; CI = confidence interval (95%); c = contingency coefficient; * using Fisher's exact test.

sexual behavior; 59% of those who were sexually active had had multiple sexual partners during their lives[25].

A study that was performed in a service specializing in infectious diseases in obstetrics and gynecology in the state of São Paulo, with 824 women with HPV, identified a greater likelihood of being seropositive, which was due to factors such as having multiple partners and prostitution. Women who had five to 10 partners were more likely to have HIV compared to women who had five partners; those with more than 10 partners were 3,487 times more likely to have the infection[26].

In relation to the physically disabled people in the present study, the conditions that increase social vulnerability, which are related to access to goods and services, such as housing, consumer goods and the freedom to express thought and attitudes[6], were identified by the associations between social, economic and demographic factors and the occurrence of STIs. The results demonstrated an association between STIs and an age that was greater than or equal to 42, which corroborated a study of the socio-demographic profile of people with HIV/AIDS in an outpatient AIDS/STI control clinic, which found an average age of 43[27]. However, it is important to note that the highest proportion of physically disabled people who had an STI reported that they were under the age of 18 years at the time of their first sexual experience. Loving experiences in adoles-

Table 5. Associations between the programmatic dimension of vulnerability and the occurrence of STIs in physically disabled people Borborema Association of Disabled People (ASDECB), Campina Grande, PB, Brazil, 2015.

Programmatic dimension of vulnerability	Occurrence of STIs						
	Yes		No		p	PR CI	c
	n	%	n	%			
Access to health services							
Yes	12	15.4	66	84.6	0.636*		
No	3	15	17	85			
Type of service accessed							
Secondary and/or tertiary level	2	9.1	20	90.9	0.278*		
Primary healthcare	10	17.9	46	82.1			
Difficulty of access							
Did not need	3	20	12	80			
Transport, company or time	0	0	5	100			
Medical consultation Gynecologist /Women							
Yes	6	16.2	31	83.8			
No	0	0	4	100			
Medical consultation Urologist/Men							
Yes	6	31.6	13	68.4	**0.030***	4.00 (1.12-14.2)	0.293
No	3	7.9	35	92.1			
Frequency of consultation Gynecologist /Women							
Periodically†	3	12	22	88	0.432*		
Not periodically#	12	16.4	61	83.6			
Frequency of consultation Urologist/Men							
Periodically†	1	14.3	6	85.7	0.696*		
Not periodically#	8	16	42	84			

Source: research data; PR = prevalence ratio; CI = confidence interval (95%); c = contingency coefficient; *using Fisher's exact test. † One or more consultation in the same year. # More than one year without a consultation.

cence are characterized by the early onset of sexual activity, as well as multiple sexual partners, which provide a greater chance of being affected by infections and even unplanned pregnancies[28].

The type of disability was also associated with the occurrence of STIs; the proportion of people with congenital physical disabilities who developed a disease was greater than for those with an acquired disability. The existence of a physical disability results in an individual having reduced physical capacity and also having to face barriers imposed by society. Limitations and barriers, such as lack of access to transport, prejudice and the fear of other people can reduce the power to take decisions and result in individuals contacting the health services, as well as reporting their sex life, which makes them more vulnerable[12,13-29]. An exploratory study that was conducted in São Paulo, SP, Brazil indicated that in addition to the architectural barriers that people with physical disabilities face, specialized services are not able to receive them[29].

Ayres considers that the conditions that enhance programmatic vulnerability are the way that the health system is organized, health prevention and protection actions, relationships with professionals, as well as the resources that are available in the area of health[6]. In the present study, the results demonstrated an association between the variables of access to health services and the occurrence of STIs. The association that was identified between having more frequent consultations with an urologist and the occurrence of STIs seems contradictory; however, it may be related to reverse causality, which is typical of transversal studies. Moreover, many men only seek healthcare when they already have signs and symptoms of a disease, at the expense of health promotion and preventive practices. Other factors that contribute to the lack of contact

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with health services are the difficulty individuals have in recognizing that they are sick and the fear of discovery of some serious disease[30].

People with physical disabilities face a lack of access to health services and rehabilitation due to the deprivation of material resources, which prevents them from obtaining the equipment to ensure greater autonomy, a lack of investment in their education and professional habilitation/rehabilitation[7]. Even in this context, there were no other associations in the group of programmatic vulnerability conditions; however, it is believed that with a sample containing a larger number of people who have had STIs that might occur, taking into consideration the strong influence of social determination on the health-disease process.

Conclusion

Physically disabled people have conditions that enhance their vulnerability to STIs which are linked to individual, social and programmatic dimensions. The individual dimension is enhanced by the risk factor of having multiple partners. The more sexual partners an individual has, the greater their risk of exposure to STIs. The social dimension is enhanced by the factors of age and congenital disabilities. Older individuals and people with congenital disabilities showed limitations that may restrict their coping capacity in relation to vulnerability. The programmatic dimension is enhanced by specialized consultations. Seeking health services only for the purpose of treatment may affect the levels of prevention.

Conditions of vulnerability can be minimized in relation to the occurrence of STIs. This requires that health professionals and the health sector adopt specific preventative actions that are linked to the reality of the social and health conditions of physically disabled people, as well as advancing policies related to the social inclusion of physically disabled people, minimizing their difficulties, improving their participation and integrating them into families and society. Despite the limitations of this study it provided useful information, which can be tested by future research.

This study contributed to the programs and support networks that focus on the health of physically disabled people. Further research is required that emphasizes health promotion and prevention factors that are aimed at strategies designed to control and eradicate STIs in Brazil and worldwide. Furthermore, these data can be of use to health service managers and regional basic health units in determining priorities and attention to the health of physically disabled people.

The limitations of this study were related to its sample size and the fact that it did not assess all conditions of vulnerability or the level of vulnerability. The literature in this area is still hardly developed and it is suggested that future research addresses the vulnerability indices applied to physically disabled people, as well as longitudinal studies to understand the relationship between the different domains of vulnerability over time.

Collaborations

JS Aragão Aragon collaborated in the conception and design and wording of article; ISX França collaborated in the conception and design and critical review. AS Coura collaborated in the analysis and interpretation of data and critical review. CCM Medeiros and BC Enders collaborated in critical review and approval of the version to be published.

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