

## Negative self-perception of health: prevalence and associated factors among elderly assisted in a reference center

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**Abstract** *The negative self-perception of health is a relevant construct for the analysis of the elderly population health conditions and should be recognized as a guiding tool for health promotion actions. We aimed to verify the prevalence and the associated factors to a negative self-perception of health by elderly assisted in a reference center. This is an analytical cross-sectional study with convenience sampling conducted in 2015. The negative self-perception association with health-related sociodemographic variables was investigated. Bivariate analysis followed by multiple analysis by Poisson regression was performed to verify the variables associated with the outcome. Three hundred sixty elderly were evaluated. The negative self-perception of health prevalence was 60.5%. The following associated factors were identified in the final model: age range 65-79 years (PR=1; CI95%=0.648-0.974; p=0.027); frailty (PR=1.28; CI95%=1.07-1.54; p=0.007); depressive symptoms (PR=1.40; CI95%=1.19-1.67; p=0.000); and providing care to someone (PR=1.49; CI95%=1.18-1.88; p=0.001). The elevated prevalence of negative self-perception of health and the associated factors point to the need for effective health promotion actions and more specific care for the elderly assisted in the reference center.*

**Key words** *Self-assessment, Elderly, Elderly health, Aging, Health services for the elderly*

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## Introduction

Self-perception of health is a subjective indicator of the individual's perception of his health. It is reliable and can be applied effectively, quickly and inexpensively in the health evaluation of population groups<sup>1,2</sup>. It incorporates both physical, cognitive and emotional components, as well as aspects related to well-being and satisfaction with own life<sup>3-5</sup>. Thus, it has been widely evidenced as an essential aspect of individual and collective well-being<sup>6</sup> and is recommended for population health analyses<sup>3</sup>.

Research on health self-perception has been widely used in population studies, and interest in the subject has also grown in surveys covering the elderly<sup>1,4,6</sup>. Whether in the national<sup>1,3,6-11</sup> or international<sup>12-17</sup> scenario, a decline in the general health status of this group, affecting self-perception is noted. Thus, this measure can predict robustly and consistently morbimortality, functional capacity decline, inactivity, and depression. Therefore, it is a relevant construct for the analysis of the health conditions of the elderly population that should be recognized as a useful device, with following application in actions to promote the health of this group<sup>1-4,6,18</sup>.

The verification of self-perception of health among the elderly has a significant global relevance<sup>2,7-9,12-18</sup>. International studies reveal that such outcome is related to aspects such as higher educational level<sup>17</sup>, being currently employed<sup>17</sup>, widowhood<sup>16</sup>, social support<sup>13</sup>, chronic disease<sup>12,13,16</sup>, depression<sup>12,14,16</sup>, functional capacity<sup>12</sup>, instrumental activities of daily living<sup>14</sup>, physical activity<sup>15,17</sup>, fear of falling<sup>16</sup>, frailty syndrome<sup>16</sup>, obesity<sup>17</sup>, satisfaction with health services<sup>12</sup> and mortality<sup>12</sup>. Moreover, the binomial self-perception of health-quality of life is a consensus in these surveys<sup>11-17</sup>.

This issue is also relevant in Brazil, which in recent years evidences an accelerated population aging process, with impacts and challenges for health services. It is plausible to infer that everyday events among the elderly, such as a more significant number of chronic noncommunicable diseases and functional disability, negatively affect the perception of their health. Also, because it refers to subjective evaluation, self-perception of health has a multidimensional nature; it involves lifestyles and psychological, demographic and socioeconomic aspects<sup>2,7-9,18,19</sup>. The different associated factors indicate that elderly health is linked to determinants that are close to the expanded concept of health<sup>3</sup>.

Several aspects of the subjective health of this age group of Brazilians remain to be investigated. Knowledge of the aspects involved in health perception can reveal the most vulnerable subgroups of the elderly, as well as anchor health services in health promotion initiatives and a better quality of life<sup>6</sup>. Research on this subject is required due to increased elderly population and the applicability of self-perception of health as indicative of the general health conditions of the population. This will allow to clarify, monitor and compare results to guide decision-making regarding the formulation of health policies and interventions more appropriate to the specificities of the elderly<sup>3</sup>.

The singularities that comprise the self-perception of health justify the realization of local and regional studies that can support health sector managers in the elaboration of measures to improve the health conditions of the community, especially the elderly, which has increased in recent years<sup>5,9</sup>. Thus, elucidating the factors that influence the elderly's self-perception of health can contribute to identifying which realms must be better weighted and recognized by health professionals<sup>3</sup>. Although such perception is an essential indicator for the general health surveillance of the elderly, it is still hardly discussed in the Brazilian literature<sup>10</sup>. It is noteworthy that there are gaps in evidence, especially in regions in need and distant from large metropolitan centers, due to the scarcity of epidemiological studies in these places, such as in the northern state of Minas Gerais (MG), Brazil.

In this region, the "Mais Vida" Elderly Health Care Reference Center (CRASI) stands out. Since Brazil is experiencing an accelerated process of population aging, with growing health system demands<sup>19</sup>, the Minas Gerais State Health Secretariat has implemented the "Mais Vida" Program and the Elderly Health Care Network in the State of Minas Gerais. The CRASI is one of the services of this network and has a multidisciplinary team and counter-referral to the primary health facilities, and is a reference for the 96 municipalities of the region<sup>20</sup>. However, this service of undoubted potential for the health care of the elderly population is still a recent point in this network. Research on the profile and self-perception of the health of users assisted in this area is unknown. These singularities evidence the need for multidimensional investigations in this setting, which can be used in the establishment of strategies aimed at healthy aging. Thus, this research is justified, considering the situation addressed, the need to include new epidemiological infor-

mation on the subject, the socioeconomic and cultural context of the place investigated and the pioneering due to the scenario – secondary care reference service.

This study aimed to verify the prevalence and the factors associated with negative self-perception of health in elderly assisted in a reference service.

## Methods

This is a cross-sectional, analytical research with a quantitative approach performed with elderly users of the “CRASI Eny Faria de Oliveira”, the only specific reference service for the elderly clientele in the region, which provides multidimensional care through a multidisciplinary team staffed with a social worker, a nurse, a pharmacist, a physiotherapist, a speech therapist, a physician geriatrician, a nutritionist, a psychologist and an occupational therapist. It is located in the city of Montes Claros, North of the State of Minas Gerais, Brazil. The city has 402,027 inhabitants and is the leading regional urban hub.

The sample was obtained by convenience according to the demand served during the period from May to July 2015. During the period of data collection, the mean number of visits per multidisciplinary team was approximately 1,450 per month. The inclusion criteria of age 65 or older was used, since the instrument implemented to measure frailty, namely, the Edmonton Frail Scale (EFS), was validated only for people of this age group<sup>21</sup>. In turn, the elderly with cognitive impairment, according to the evaluation of the family; with an unadjusted hearing impairment that would prevent understanding the questions; and those who refused to participate in the research (as well as elderly’s relatives who did not authorize elderly’s participation) were excluded. Participants were residents of Montes Claros and the other municipalities in the region covered by said service.

The interviewers were previously trained. The primary data were collected through direct contact and interviews, with the elderly as respondents. The data collection instrument used was based on similar, population-based works<sup>1,3,4,6,7,9,10,22</sup>, and was previously tested in a pilot study consisting of the variables shown below.

The dependent variable was self-perception of health, ascertained by the following question to the elderly: “How would you rate your health status?” The response options were: “Very Good”,

“Good”, “Fair”, “Poor” or “Very Poor”. Concerning the analysis, answers were dichotomized, and the positive responses were “Very Good” and “Good”, and negative perception of health was taken as the sum of “Fair”, “Poor” and “Very Poor” answers, following previous investigations on the subject<sup>2,8-10,23</sup>.

The independent variables were grouped into sociodemographic and health-related, as described below:

- *Sociodemographic variables*: gender (male x female); age (65-79 years x  $\geq$  80 years); self-reported skin color (white x others); years of schooling (up to four years x > four years); marital status (married or common-law marriage x without partner); household arrangement (does not live alone x lives alone); condition of providing care to someone (no x yes); own income (no x yes); monthly household income (up to one minimum wage x > one minimum wage). All these variables were verified through the self-report of the participants.

- *Health-related variables*: frailty (not frail x frail); presence of chronic comorbidities – all according to self-report (hypertension, diabetes mellitus, urinary incontinence, osteoarticular disease, heart disease, stroke – categorized into no x yes); polypharmacy (no x yes) – considering the use of five or more drugs<sup>20</sup>; hospitalization in the last year (no x yes); depressive symptoms (no x yes); falls (no x yes). All these variables were investigated considering the self-report of the participants. Frailty and depressive symptoms were assessed by specific instruments.

The EFS was culturally adapted and validated for the Portuguese language<sup>21</sup> and applied to assess frailty. It evaluates nine realms: cognition, health status, functional independence, social support, medication use, nutrition, mood, urinary continence and functional performance, distributed in 11 items with a score ranging from zero to 17. EFS’ scores are as follows: 0-4, no presence of frailty; 5-6, apparently vulnerable to frailty; 7-8, light frailty; 9-10, moderate frailty; and 11 or more, severe frailty. In this study, for data analysis, the results of the variable were dichotomized into non-frail (final score  $\leq$  6) and frail (score > 6)<sup>21,24</sup>.

Depressive symptoms were determined using the 15-question Geriatric Depression Scale. This instrument has also been validated nationally and consists of negative/affirmative questions. A score of six or more points indicates depressive symptomatology. Thus, the cut-off point adopted in this study was 5/6 (no/yes – equivalent to no case/case)<sup>25</sup>.

A bivariate analysis was performed, followed by multiple analysis by Poisson regression with robust variance. In each of the analyses, the Prevalence Ratios (PR) were calculated and were considered with their respective 95% confidence intervals. Concerning the multiple analysis, only the variables with an association up to the level of 20% ( $p < 0.20$ ) were evaluated in the bivariate analysis. In the final model, after the multiple analysis, only the variables associated up to the level of 5% ( $p < 0.05$ ) were maintained. The analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 17.0 (SPSS for Windows, Chicago, USA).

The Research Ethics Committee of the State University of Montes Claros (Unimontes) approved the research project. All the participants were informed about the research and provided their consent by signing the Informed Consent Form.

## Results

A total of 360 elderly individuals aged 65 years and over participated in the study. The predominant age group was 65-79 years, which represented 75.3% of the study population. The mean age of the group was 75 years ( $SD \pm 7.6$ ). Most were female (78.0%), did not live alone (83.0%), had "other" skin color (62.5%), claimed to have own income (97.5%) and up to four years of schooling (85.8%).

The record of hospital admission with over 24 hours stay was pointed out by 21.0%. Aspects of self-reported morbidity investigated revealed that 76.9% were hypertensive, 54.4% had a fall in the last year, 43.9% reported osteoarticular diseases, 37.2% had depressive symptoms, 21.9% had heart disease, 20.3% were diabetics, and 10.6% had a history of stroke.

As to self-perception of health, 142 (39.4%) elderly had a positive perception of their health ("Very Good" or "Good"); 143 (39.7%) described their health as "Fair"; while 75 (20.8%) referred to their health as "Poor" or "Very Poor". Considering as negative perception the categories "Fair", "Poor" and "Very Poor", the prevalence of negative self-perception of health in this study was 60.5%. However, when only the categories "Poor" and "Very Poor" were included, this prevalence was 20.8%.

The bivariate analyses between negative self-perception and other variables are shown in Tables 1 and 2.

In the final model, the factors associated with negative self-perception of health were: age range 65-79 years (PR = 1; 95%CI = 0.648-0.974;  $p = 0.027$ ); frailty (PR = 1.28; 95%CI = 1.07-1.54;  $p = 0.007$ ); depressive symptoms (PR = 1.40; 95%CI = 1.19-1.67;  $p < 0.001$ ); and providing care to someone (PR = 1.49; 95%CI = 1.18-1.88;  $p = 0.001$ ) (Table 3).

## Discussion

When considering the categories "Fair", "Poor" and "Very Poor", this study evidenced a high prevalence of negative self-perception of health in the elderly attended by the CRASI and allowed to know the associated factors.

The prevalence values of this outcome swing in the literature, with the following records of findings: from 12.6 to 51.9% in a systematic review on the self-perception of health by Brazilian elderly<sup>3</sup>; 57.5% in a large municipality of MG<sup>9</sup>; 51.2% in Florianópolis-SC<sup>10</sup>; 49.6% in a survey carried out in three Brazilian cities<sup>7</sup>; 10.9% in Campinas-SP<sup>6</sup>. The prevalence was higher in a reference center in Belo Horizonte-MG, at 70.1%<sup>26</sup>. In other countries, findings were as follows: in Germany, 62.5% of the elderly reported negative self-perception of health<sup>14</sup>; in Shanghai, China, the proportion was 56.8%<sup>12</sup>; while in Santiago de Cali, Colombia, the prevalence was 40.1%<sup>16</sup>.

It is observed that the prevalence of negative self-perception of health differs considerably between the studies, which requires caution in the comparison of results. Although the questions about this variable – as well as the response options – are similar among the investigations, the findings are not unanimous. The probable explanation is the fact that categorization is not consensual among the surveys. These discrepancies may also be due to short-term fluctuations in health or illness caused by cyclical variations related to well-being. Besides, the self-perception of health is related to several essential realms of elderly health. There may be differences between the regions studied, as regards socioeconomic, demographic and local health system aspects, which may interfere with the health of the elderly population and the prevalence of the outcome analyzed<sup>10</sup>.

It should be mentioned that these differences may also have implications in the setting of this investigation, which serves users from several municipalities, with very different realities and

**Table 1.** Results of the bivariate analysis between negative self-perception of health and sociodemographic variables in the elderly assisted in the “Mais Vida” Elderly Health Care Reference Center, Montes Claros, Minas Gerais, Brazil, 2015 (n = 360).

Independent variables	Negative self-perception of health				PR	CI 95%	P
	Yes		No				
	N	%	N	%			
Gender							
Male	45	57.0	34	43.0	1		
Female	173	61.6	108	38.4	1.08	0.87-1.33	0.45
Age group							
65-79 years	170	62.7	101	37.3	1		
≥ 80 years	48	53.9	41	46.1	0.86	0.69-1.06	0.14
Self-reported skin color							
White	92	68.1	43	31.9	1		
Other	126	56.0	99	44.0	0.82	0.69-0.86	0.02
Schooling in years of study							
Up to 4 years	190	61.5	119	38.5	1		
>4 years	28	54.9	23	45.1	1.12	0.86-1.45	0.37
Marital status							
With partner	87	59.6	59	40.4	1		
Without partner	131	61.2	83	38.8	1.02	0.86-1.21	0.75
Household arrangement							
Does not live alone	177	59.2	122	40.8	1		
Lives alone	41	67.2	20	32.8	1.13	0.93-1.38	0.24
Provides care to someone							
No	178	67.2	87	32.8	1		
Yes	40	42.1	55	57.9	0.62	0.48-0.80	0.00
Own income							
No	5	55.6	4	44.4	1		
Yes	213	60.7	138	39.3	0.91	0.50-1.65	0.75
Monthly household income							
Under 1 minimum wage	74	64.3	41	35.7	1		
>1 minimum wage	144	58.8	101	41.2	1.09	0.92-1.30	0.31

care profiles. However, such divergences do not mean a loss of the indicator, which is an advantageous measure in epidemiological studies, and reflects several aspects of the health profile, care and use of health services<sup>2,9</sup>.

Despite these discrepancies, the results regarding the self-perception of health by the elderly participants of this study were not satisfactory. It is expected that, with age and the consequent physiological and social changes in the individual's life, health conditions deteriorate and, consequently, the self-assessment outcome tends to reflect that. However, this situation should not be seen as something natural and cannot be neglected. The high prevalence of negative self-perception of health in the elderly requires particular

attention, mainly from professionals of PHC and reference services, due to its direct and indirect impact on health deterioration<sup>27</sup>.

Therefore, efforts are required to ensure access to quality health care, with careful monitoring of health professionals, leisure activities, and health promotion, as well as higher social integration. This would also improve the propensity of this population segment to adhere to therapeutic protocols and health behaviors that minimize the risks of an adverse trend of the aging process<sup>8</sup>, which are recommendations also indicated in the international literature<sup>12,15,17,28,29</sup>.

Regarding the associated factors, this study showed a higher prevalence of negative self-perception of health among the elderly between 65

**Table 2.** Result of the bivariate analysis between negative self-perception of health and health-related variables in the elderly assisted in the “Mais Vida” Elderly Health Care Reference Center, Montes Claros, Minas Gerais, Brazil, 2015 (n = 360).

Independent variables	Negative self-perception of health				PR	CI 95%	P
	Yes		No				
	N	%	N	%			
Frailty							
Not frail	95	50.0	95	50.0	1		
Frail	123	72.4	47	27.6	1.44	1.22-1.75	0.00
Urinary incontinence							
No	152	55.7	121	44.3	1		
Yes	66	75.9	21	24.1	1.36	1.16-1.59	0.00
Arterial hypertension							
No	56	61.5	35	38.5	1		
Yes	162	60.2	107	39.8	0.97	0.81-1.18	0.82
Diabetes Mellitus							
No	177	61.7	110	38.3	1		
Yes	41	56.2	32	43.8	0.91	0.72-1.13	0.39
Heart disease							
No	168	59.8	113	40.2	1		
Yes	50	63.3	29	36.7	1.05	0.87-1.28	0.57
Osteoarticular disease							
No	114	56.4	88	43.6	1		
Yes	104	65.8	54	34.2	1.16	0.98-1.37	0.07
Stroke							
No	189	58.7	133	41.3	1		
Yes	29	76.3	9	23.7	1.30	1.06-1.58	0.03
Polypharmacy							
No	138	57.5	102	42.5	1		
Yes	80	66.7	40	33.3	1.15	0.98-1.37	0.09
Hospitalization in the last year							
No	180	63.4	104	36.6	1		
Yes	38	50.0	38	50.0	0.78	0.62-1.00	0.05
Depressive symptoms							
No	112	49.6	114	50.4	1		
Yes	106	79.1	28	20.9	1.59	1.36-1.86	0.00
Falls							
No	112	68.3	52	31.7	1		
Yes	106	54.1	90	45.9	0.79	0.67-0.93	0.00

and 79 years of age, whereas among the older elderly, this perception was better, and this finding was identified in studies Spain<sup>30</sup> and Belo Horizonte-MG<sup>23</sup>. These results suggest a process of adaptation or acceptance of long-term elderly concerning the health conditions considered appropriate to aging, as well as comorbidities, disabilities, and hospitalizations that may affect them<sup>30</sup>, as corroborated by a survey conducted in the Republic of Latvia, Europe<sup>28</sup>. Expectations regarding the health of individuals in the

last stages of life are lower since the fact that they survived to that stage already is a positive state of health. It may also be that this result has suffered the effect of selective survival, which results from only the healthiest individuals surviving the most advanced age groups and, therefore, have better perceptions about their health<sup>4,30</sup>.

However, other investigations in Brazil<sup>4,31</sup>, in Shanghai<sup>12</sup> and Spanish municipalities<sup>13</sup> indicated that increased age was associated with poor self-assessment of health. It is known that

**Table 3.** Factors associated with negative self-perception of health in the elderly assisted in the “Mais Vida” Elderly Health Care Reference Center, Montes Claros, Minas Gerais, Brazil, 2015 (n = 360).

Independent variables	Adjusted PR	CI95%	p-value
Age group			
65-79 years	1		
≥ 80 years	0.79	0.648-0.974	0.027
Frailty			
Not frail	1		
Frail	1.28	1.07-1.54	0.007
Depressive symptoms			
No	1		
Yes	1.40	1.19-1.67	<0.001
Provides care to someone			
No	1		
Yes	1.49	1.18-1.88	0.001

the longer the age reaches long-lived age groups, the more general health conditions tend to deteriorate. Also, most chronic diseases are more common at more advanced ages, substantially impairing the outcome in question<sup>4,30</sup>.

The results of this research showed an association between negative self-perception of health and the fact of being frail, which was also observed in a study carried out in a large municipality of Minas Gerais<sup>9</sup> state and another in the city of Santiago de Cali, Colombia<sup>16</sup>. Frailty is defined as a clinically recognizable condition of increased vulnerability resulting from declining reserve and multisystem function associated with aging, compromising the ability to cope with stressful conditions. It is determined by the combined effect of biological aging with chronic conditions, increases susceptibility to diseases and influences functional capacity, besides impairing dependence, mobility, postural stability and lucidity of the elderly<sup>32-34</sup>. Therefore, any degree of frailty is expected to be associated with a negative perception of health<sup>9,22</sup>.

Initially, we expected a higher frequency of frailty in the setting of this investigation, since the frail elderly has an absolute indication for a specialized, multidimensional and multidisciplinary evaluation, according to the criteria of referral to the CRASI<sup>20</sup>. It should be pointed out that the association identified shows the negative impact of the condition of frailty on the individ-

ual's life, which requires greater care by health professionals and interventions to prevent such conditions<sup>9,22,29</sup>.

The current study showed another essential finding: the association of the outcome variable with depressive symptoms, a result also reported in the national literature<sup>1,3,8,26,27,35,36</sup>, as well as in the already mentioned studies conducted in Shanghai<sup>12</sup>, in Germany<sup>14</sup>, in Santiago de Cali<sup>16</sup> and the Republic of Latvia<sup>28</sup>. We emphasize that the poor evaluation of one's health can be seen as a depressive symptom<sup>36</sup>. The conditions associated with the emergence of depressive symptoms may concurrently influence the negative self-perception of health by the elderly. Such symptoms have a negative impact on all aspects of the life of the elderly, affecting their lives in the family and the community; they are also associated with adverse outcomes, such as physical health impairment and greater use of services<sup>27,35,36</sup>.

The association found is a consistent result: the symptoms in question are one of the most frequent problems in the field of geriatrics. Despite the subjectivity of this aspect, the way the individual sees himself concerning his general state is intimately related to depressive pictures. The worse organic health also increases the exposure to these conditions, and this increase is directly related to the number of chronic diseases, which was high in this research. Thus, it is a situation that requires increased care by the family, caregivers and health professionals, due to its repercussion in the deterioration of elderly's health. Early identification of cases and best approach to PHC and reference services are recommended to provide timely and accurate diagnosis and interventions and to reduce costs to the health system<sup>27</sup>.

The need for more significant support to the elderly is pertinent, considering that the participants of this research that provide care to another person also had worse self-perception of their health. Currently, with increasing longevity, we note a growing trend in the number of elderly caregivers, which translates into a higher number of elderly being cared for by other elderly. Younger elderly have more energy to care for older individuals<sup>37</sup>.

Possibly, this is also a reality among the participants of this investigation. However, the task of caring is complicated, so daily activities by the elderly caregiver to the benefit of some dependent individuals can generate overload and physical and mental health impairment<sup>38,39</sup>. Thus, it is believed that privileging the evaluation of the over-

load of elderly caregivers, and including them in care plans with specific support actions, can help both caregivers and those receiving their care<sup>38</sup>.

Finally, it is reported that this work has limitations. It is derived from a cross-sectional study, and it is not possible to conclude that there is a causal association between negative self-perception of health and associated factors, which would be feasible in longitudinal designs. The variables were measured by information from the elderly, and although this is a valid procedure and used in several studies, it may have been compromised by memory bias and low schooling. Also, it was a convenience sample, confined to a reference center, where external validity is limited, and the results can be extrapolated only to a similar population and setting.

Despite these limitations, this research had enough sample to fit the regression models to the main confounding factors of interest. It has a unique character, since the setting was a center of reference, while the other works are mostly

population-based; the literature corroborated the results and the associations recorded. Moreover, in the light of the knowledge generated in this study, professionals and managers can plan measures that promote improvements in elderly health care, more appropriate to the life and health context of this group.

## Conclusion

This study evidenced a high prevalence of negative self-perception of health among the elderly attended in a reference center. We identified that being in the 65-79 years' age range, being frail, having depressive symptoms and providing care to someone remained as factors associated with this prevalence. These findings indicate the need for practical actions to promote health and more specific care, directed mainly to the needs of the elderly who self-rated their health negatively and fit these factors.



## Collaborations

JA Carneiro: study design, data collection planning, data analysis and interpretation and drafting of the paper. CAD Gomes, W Durães, DR Jesus and KLL Chaves: study design, data collection and interpretation and drafting of the paper. CA Lima: study design, data collection planning, data interpretation and drafting and critical review of the paper. FM Costa: study design, data collection planning, data analysis and interpretation, and critical review of the paper. AP Caldeira: conducted all the stages of the study and the elaboration of the paper, participated in the design of the study, data collection planning, data analysis and interpretation, and the critical review of the paper. All authors have read and approved the final version of the paper.

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