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Article

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Psychometric properties of the Negative Acts Questionnaire for the detection of workplace bullying: an evaluation of the instrument with a sample of state health care workers

Características psicométricas do Negative Acts Questionnaire *para detecção do assédio moral no trabalho: estudo avaliativo do instrumento com uma amostra de servidores estaduais da saúde*

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Abstract

Objective: to evaluate psychometric properties of the Negative Acts Questionnaire – Revised (NAQ-R), an instrument for detecting bullying, and to investigate the correlation between bullying dimensions and the variables job satisfaction and self-reported health according to sex. *Methods*: cross-sectional study with factor analysis of a sample of 677 workers from state healthcare units. Data were collected at face-to-face interviews using a questionnaire predominantly focused on the respondents' sociodemographic and employment-related characteristics as well as the 22 NAQ-R questions. *Results*: two dimensions, or latent variables, were identified, namely personal bullying and work-related bullying. The work-related bullying dimension was associated with self-reported health in men (rho=0.33; p=0.02). Likewise, personal bullying was also found to be associated with self-reported health in men (rho=0.39; p<0.01) and with job satisfaction (rho=0.28; p=0.05). Among women, the only dimension found, compatible with personal bullying, was correlated with job satisfaction (rho=0.37; p<0.01) and self-reported health (rho=0.19; p<0.01). *Conclusion*: NAQ-R has an acceptable performance for detecting workplace bullying, proving itself capable of identifying the negative acts that characterize this type of abuse.

Keywords: bullying; workplace violence; data collection; surveys and questionnaires.

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Introduction

Violence in the workplace has become a worrying phenomenon in modern society as a consequence of people's insecurity, anger and dissatisfaction towards the fulfillment of their basic needs. In the service sector, such as in health and other public services, there are frequent episodes involving workers and almost always users who are unhappy with the service offered to them. Usually[1], they express their dissatisfaction in an aggressive way, with direct and visible violence[2]. However, the phenomenon is not always noticeable. Sometimes, a kind of relationship with antagonistic characteristics develops among workers. It is marked by psychological violence or stalking, and is called "bullying".

Despite being frequent, the prevalence of bullying at work usually presents distinct results in the several studies carried out nationally and internationally. In Japan, the prevalence was of 9% among civil servants[3]. In Italy, a prevalence of 15.2% was found in a sample of over 3,000 workers of the public and private sectors[4]. A study carried out in Belgium obtained different results, depending on the bullying evaluation: 3% for severe and 17% for less severe[5] bullying In Brazil, a study carried out in Fortaleza with 218 workers randomly chosen in the queues of unemployed people seeking for unemployment insurance and labor orientation at the Regional Labor Station, verified that 25.2% of workers considered themselves victims of bullying[6].

These variations in the found prevalence result from how bullying is understood and the various measures and criteria used[5]. Two different methods are often used to measure or identify bullying at work. One of them, named subjective criterion, consists of asking directly to respondents, after presenting a definition of the phenomenon, if they see themselves as victims of bullying,

Researchers who use this modality believe that the subjective criterion allows the respondent to distinguish more easily behaviors that are tolerated and those that are not[4,7]. For these authors, the way the person reacts to an action is what will determine its severity. This means that the performed action will only be considered negative and, consequently, bullying, if the victim declares it to be.

However, the fact that respondents consider themselves victims of bullying due to an unwanted or harmful behavior is not enough to typify such behavior. In this sense, it is not just a question of whether the action is or is not tolerated, but defining, in this case, if what someone is experiencing is bullying or not. Thus, in countries where the phenomenon is still not very well known, this method presents limitations, which is why many studies have been using a more objective procedure, although they adopt the subjective method concomitantly[8].

Another form of investigation is to know how frequently participants are exposed to different negative acts or behaviors that characterize bullying, without the need to mention the term. According to the operational criteria set by Leymann[9], bullying occurs when at least one negative act is mentioned by the victim to occur weekly or daily and for a period of at least six months[10]. However, some authors prefer to expand for two (instead of one) the number of acts to be considered, following the suggestion of Mikkelsen and Einarsen[4,11].

Therefore, due to limitations in the definition and ways of identifying bullying, it is increasingly relevant to develop valid and reliable instruments, since the different ways of dealing with the problem hinder the identification and estimation of the prevalence of the phenomenon, which is eventually confused with other humiliating and harmful practices.

Some instruments have been created aiming at offering the most accurate diagnosis regarding the occurrence of bullying at work. One of these instruments is the Negative Acts Questionnaire revised version (NAQ-R), developed by Einarsen and Raknes[5]. Its initial version was composed of 48 questions, which dropped to 22 items after the revision. Its items refer to certain negative behaviors, but they do not refer to the term bullying. The researches using this questionnaire have shown that its dimensionality seems to converge to two factorial structures. The first factor includes hostile actions concerning the person (personal bullying); while the second factor encompasses acts of hostility directed to the the person's work (work-related bullying)[4]. Other studies, however, have identified three or more factorial structures in addition to these, such as personal and professional disqualification and physical intimidation[3,12].

In Brazil, the NAQ-R has been tested and validated by Maciel and Gonçalves[8] with two samples, one composed of workers from several sectors and another exclusively of bank workers. The reliability coefficient obtained through Cronbach's alpha from the combination of the two samples (n=1,026) was 0.90, a result that shows an excellent internal consistency. In addition to this procedure, the correlation between the sum of the 22 items of the scale and a question about subjective bullying was observed. The result was a Pearson correlation coefficient of 0.49 ($p<0.01$), which could indicate

that "feeling bullied" is related to reporting the frequency of negative acts.

Based on these results, the authors concluded that the NAQ-R has construct validity, since both ways of evaluating bullying (objective and subjective) would be positively correlated. However, Martins and Ferraz[13] argue that the procedures adopted by the authors would not be enough evidence to confirm the validity of the instrument, which would justify the development of other studies, also with other job categories, to assess not only the psychometric characteristics of the instrument, but also to estimate the prevalence of the phenomenon.

Individual and work-related characteristics can be related to conflicts at work, thus, it is important to use some concepts to understand these phenomena, among which gender stands out. Although both men and women are subject to bullying, it is assumed that there are differences, not because of biological determinism, but due to the different roles assigned to each gender. Bullying is considered to be one of the types of work-related violence that affect women the most. According to Fontes et al.[14], just by the fact of being women, female workers would be strategically marginalized and bullied, in order for them not to reach positions with greater responsibility. According to O'Donnell and Macintosh[15], gender constructions and expressions may influence the vulnerability and exposure to bullying at work, as well as the consequences and seriousness of the phenomenon to health, which may vary according to sex.

The discussion on bullying also starts with understanding both its impacts in the subject's professional and social relations and its negative implications to health[16]. The victimization by bullying produces harmful effects on the victims' mental health. Nielsen et al.[17] conducted a longitudinal study with 1,846 Norwegian workers and found a link between bullying and suicidal thoughts.

The study by Fontes et al.[14] identifies several consequences of bullying, ranging from psychosocial to physiological demonstrations, with predominance of headaches and gastrointestinal complaints. Decreased job satisfaction is one more consequence of bullying. Job satisfaction is understood as the feeling about one's own work[18], and the best instrument for evaluating it is not yet a consensus and still needs to be better explored. One of the most important aspects related to this feeling is the relationship with colleagues and supervisors and the physical conditions of the work environment.

Therefore, the objective of this study was to: evaluate the psychometric properties of NAQ-R in a sample of state health workers; measure the prevalence of the phenomenon in this population; and investigate the correlation between the dimensions of bullying and the job satisfaction and self-reported health variables according to sex.

Methods

Study design

Cross-sectional study including 679 civil servants from the central level and in the health units under direct management of the State of Bahia Department of Health (Sesab), in the city of Salvador. For sample size definition, a simple random type probabilistic sample was calculated. A rate of 33.0%, an acceptable error of 5% and a power of 80% were assumed. The sample was, thus, set in 676 civil servants, but expanded to 800, considering possible losses. Selection was made through electronic draw from the list of servants provided by the Department. At the end, 679 people agreed to participate in the survey, however, two were unable to answer the instrument used to investigate bullying.

Instrument

Data were obtained by face-to-face interviews with a questionnaire that featured questions on sociodemographic and work-related characteristics. To investigate bullying, the authors adopted the NAQ-R[12], which was composed of 22 objective questions referring to negative acts. There were five possible answers (never, occasionally, monthly, weekly, and daily). This instrument was presented to the participants during an interview about violence at workplace. As it is a self-filling instrument, some precautions were taken to ensure that all participants would answer under the same conditions. To this end, we counted on properly trained interviewers who handed the answer sheets to the respondents as the questions were asked.

To investigate aspects related to self-reported health, a question about quality of life from the Medical Outcomes Study 36 – SF-36 was employed. It examined health conditions from the person's individual perception. The question was: "In general, as compared to people your age, how do you consider your health?", with five alternative responses (excellent; good; regular; weak; and very weak). For analysis purposes, the answers were dichotomized, using *excellent*/*good* as reference.

Similarly, job satisfaction was measured with a single question: "how do you feel regarding your work in this place?". There were five options of answers to this question: very satisfied, reasonably

satisfied, a little satisfied, dissatisfied, and very dissatisfied. When aggregated, the answers were reduced to two choices, having very satisfied/ reasonably satisfied as the reference category.

The data were collected using the Epi Data software (The Epi Data Association, Denmark).

Analysis

A factor analysis stratified by sex of the NAQ-R data was carried out using the Stata 10.0 version (Stata Corp College Station, United States) software. The correlation matrix of the items of the instrument was initially calculated in order to verify the degree of association between them. To test the application of the factor analysis, the Kaiser-Meyer-Olkin test (KMO) was used to measure sampling adequacy, taking as parameter to its interpretation the following criteria: equal or greater than 0.80, admirable; between 0.79 and 0.70, average; from 0.60 to 0.69, mediocre; from 0.59 to 0.50, bad; and below 0.50, unacceptable[19]. The internal consistency of the instrument was verified through Cronbach's alpha, considering as satisfactory a value close to 1. To identify the structure and the dimensions in the set of variables analyzed, we used the extraction of the main components method, since we consider that the data were not continuous and did not follow a normal distribution. The following criteria were applied: KMO greater and equal to 0.50, eigenvalues equal to or greater than one unit and analysis of the scree plot. Parallel analysis was employed to confirm the number of factors to be extracted, through the RanEigen version 2.0 app, developed by Enzmann. Hence, according to the test, the factors selected were those which had empirical eigenvalues that were higher than the random eigenvalues[20]. We also observed the values of commonalities to evaluate possible removal of items from the instrument during the analysis. For the interpretation of the factors, varimax orthogonal rotation was used, considering factorial loadings equal or greater than 0.40. Orthogonal rotation was adopted because of the assumption that the factors or constructs were not correlated. In order to test the external validity of the construct, we investigated the correlation between the dimensions identified in the instrument and the following variables: job satisfaction and self-reported health. The tetrachoric correlation was adopted after the recategorization of the variables as binary, with cut-off in the second quartile. To estimate the prevalence of bullying at work, we considered the occurrence of at least one weekly act, as determined by Leymann[21]. We also used a more conservative criteria, considering the report of two negative acts instead of one, according to the criterion of Mikkelsen and Einarsen[11].

Ethical aspects

The research project was previously approved by the Research Ethics Committee of the Secretaria da Saúde do Estado da Bahia (Department of Health of the State of Bahia), no. 378/2009. The civil servants agreed to participate after being informed about the objectives, methods and possible benefits of the study through the free and informed consent form. Confidentiality and privacy of information were assured to the participants.

Results

From the 679 civil servants who participated in the survey, two did not answer the NAQ-R because they were away from work in the six months prior to the study, time defined as criterion to characterize the occurrence of the phenomenon. Thus, 677 civil servants were considered for the study: 81% women, 19% men.

Most men and women lived in the capital of the state (Salvador); however, 9.3% lived in others cities of the state – the farthest one was 494 km far from the capital. The median age was 48 years (IIQ: 40; 54) for men and women. The population was mostly formed by blacks and pardos: 88.9% among men and 80.9% among women. Regarding the education level, 50.7% of women had higher education, but among men the percentage was 45.7%. Concerning marital status, 54.2% of women were married or had a partner; among men, 67.4%.

Internal validity among men

Among men, the KMO measure of sampling adequacy presented a total result of 0.66 for the scale items. With the exception of items 18 "Excessive monitoring of your work" (0.39); 15 "Practical jokes carried out by people you don't get along with" (0.34); and 22 "Threats of violence or physical abuse or actual abuse" (0.32), all other KMO values for items, individually, were equal to or greater than 0.57. The result of the Cronbach's alpha was 0.79. Initially, by the Kaiser criterion, the results pointed to the existence of three factors, which was confirmed by the scree plot analysis. However, the parallel analysis showed the existence of only two factors, whose empirical eigenvalues were higher than the random eigenvalues (**Table 1**).

Table 1 Parallel analysis – comparison between empirical and random eigenvalues, in a sample of state health servants according to sex (N=677). Salvador, BA, Brazil, 2012

Factors	Eigenvalues			
	Men		Women	
	Empirical	Random	Empirical	Random
1	4.18	1.03	4.72	1.37
2	1.91	1.67	1.20	1.31
3	1.36	1.56	0.70	1.26
4	0.88	1.46	0.59	1.22
5	0.75	1.38	0.52	1.18
6	0.63	1.30	0.40	1.15
7	0.51	1.23	0.33	1.11
8	0.41	1.16	0.15	1.08
9	0.35	1.09	0.05	1.05
10	0.21	1.03	0.04	1.03

Observing **Table 2**, it is possible to notice that the first factor, formed by eight items (3, 4, 7, 12, 13, 14, 19, and 21), refers to work-related bullying; and the second factor, with five items (1, 2, 5, 10, and 17), to personal bullying. For factor 1, the item that presented greatest loading was 3: "Being ordered to do work below your level of competence" (0.75). For factor 2, the greatest loading was for item 5: "Spreading of gossip and rumors about you" (0.87). None of the items presented high loading for more than one factor. The Cronbach's alpha for each of the factors was, respectively, 0.76 and 0.78. In the final model, factor 1 (work-related bullying) presented an eigenvalue of 3.29, explaining 33.1% of the variance; while the factor compatible with personal bullying (eigenvalue of 2.80) was responsible for 28.2% of the variance. Regarding commonalities, they ranged from 0.01 to 0.77. The item that presented the highest value was item 5, "Spreading of gossip and rumors about you". Items 17: "Practical jokes carried out by people you don't get along with" and 22: "Threats of violence or physical abuse or actual abuse", on the other hand, were the ones that presented the smallest commonality. However, we opted to keep the items even with low commonality, as their removal or retention produced results that are very close to the Cronbach's alpha (0.80).

Internal validity among women

In the women sample, the result of the sampling adequacy test (KMO) was 0.84. The highest value was for item 14: "Having your opinions ignored" (0.90); while the item with the lowest value was 15: "Practical jokes carried out by people you don't get along with" (0.62). The remaining items presented value equal to or greater than 0.72. Regarding the instrument reliability test, a Cronbach's alpha of 0.82 was found. Two factors that met the Kaiser criterion were identified, a result also confirmed by the scree plot. Differently, the parallel analysis demonstrated the existence of only one factor with empirical eigenvalue superior to random eigenvalue (**Table 1**). **Table 2** shows that the found factor explains 67.9% of the variability. The factor consists of 14 items (1, 2, 5, 6, 7, 8, 10, 12, 13, 14, 17, 18, 19, 20). The item that presented the highest factorial loading was 17: "Having allegations made against you", with factorial loading equal to 0.64. The Cronbach's alpha for the factor was 0.83. In the final model, the dimension found presented an eigenvalue of 4.72, accounting for 67.9% of the variability. When considering the use of factorials loadings equal to or greater than 0.30, only items 15: "Practical jokes carried out by people you don't get along with" and 22: "Threats of violence or physical abuse or actual abuse" presented factorial loading below this value.

As for commonalities, they ranged from 0.03 to 0.45. Item 17: "Having allegations made against you" presented the highest value, while item 15: "Practical jokes carried out by people you don't get along with" presented the smallest value. In the same way as in the men sample, the items with low commonality were kept, since, even if deleted, the result of the Cronbach's alpha remained the same (0.82).

External validity of the constructs

In **Table 3**, the result obtained by tetrachoric correlation matrix showed that, among men, the work-related bullying dimension is correlated with self-reported health (rho=0.33; p=0.02); while for personal bullying, we observed correlation with self-reported health (rho=0.39; p<0.01) and job satisfaction (rho=0.28; p=0.05). In the women sample, the only dimension found, personal bullying, demonstrated correlation with job satisfaction (rho=0.37; p<0.01) and with self-reported health (rho=0.19; p<0.01).

Prevalence of work-related bullying in health

Of the 677 people who responded to the NAQ-R, 62.4% (95% CI: 58.2-66.4) of women reported some of the negative behaviors in the last six months, while among men the prevalence was of 58.1% (95% CI: 49.1-66.7). When the operational criterion of Leymann was used, the prevalence of bullying among women was 11.5% (95% CI: 8.9-14.4), and among men, 6.2% (95% CI: 2.7-11.8). However, when considering the criterion of Mikkelsen and Einarsen, the prevalence of bullying was 4.0% (95% CI: 2.5-6.0) among women, and 2.3% (0.4-6.6) among men.

Table 2 Result of the factorial loadings from NAQ-R, in a sample of state health servants according to sex (N=677). Salvador, BA, Brazil, 2012

	Items	Factorial loading				
		Men			Women	
		Factor 1	Factor 2	Com	Factor 1	Com
1	Someone withholding information that affects your performance	*	0.63	0.50	0.41	0.18
2	Being humiliated or ridiculed in connection with your work	*	0.53	0.37	0.54	0.34
3	Being ordered to do work below your level of competence	0.75	*	0.70	*	0.15
4	Having key areas of responsibility removed or replaced with more trivial or unpleasant tasks	0.64	*	0.45	*	0.23
5	Spreading of gossip and rumors about you	*	0.87	0.77	0.50	0.33
6	Being ignored or excluded	*	*	0.21	0.53	0.29
7	Having insulting or offensive remarks made about your person, your attitudes, or your private life	0.49	*	0.28	0.53	0.41
8	Being shouted at or being the target of spontaneous anger	*	*	0.16	0.50	0.27
9	Intimidating behaviors such as finger-pointing, invasion of personal space, shoving, blocking your way	*	*	0.31	0.51	0.18
10	Hints or signals from others that you should quit your job	*	0.66	0.55	*	0.27
11	Repeated reminders of your errors or mistakes	*	*	0.27	*	0.17
12	Being ignored or facing a hostile reaction when you approach	0.50	*	0.30	0.62	0.43
13	Persistent criticism of your errors or mistakes	0.47	*	0.45	0.56	0.36
14	Having your opinions ignored	0.46	*	0.28	0.53	0.37
15	Practical jokes carried out by people you don't get along with		*	0.01	*	0.03
16	Being given tasks with unreasonable deadlines	*	*	0.15	*	0.31
17	Having allegations made against you	*	0.59	0.51	0.64	0.45
18	Excessive monitoring of your work	*	*	0.13	0.45	0.32
19	Pressure not to claim something to which by right you are entitled	0.67	*	0.47	0.49	0.34
20	Being the subject of excessive teasing and sarcasm	*	*	0.43	0.51	0.30
21	Being exposed to an unmanageable workload	0.44	*	0.30	*	0.27
22	Threats of violence or physical abuse or actual abuse	*	*	0.01	*	0.06
Eigenvalues		3.29	2.80	-	4.72	-
Variance		33.1	28.2	-	67.9	-
Cronbach's alpha		0.76	0.78		0.83	

Com: Commonality
*: Factorial loading with value lower than 0.40

Table 3 Correlation between the dimensions of the NAQ-R, self-reported health, and job satisfaction, in a sample of state health servants according to sex (N=677). Salvador, BA, Brazil, 2012

Constructs	Dimensions of the NAQ-R					
	Personal bullying				Work-related bullying	
	Men		Women		Men	
	Corr	p	Corr	p	Corr	p
Self-reported health	0.39	<0.01	0.19	<0.01	0.33	0.02
Job satisfaction	0.28	0.05	0.37	<0.01	0.26	0.08

Corr: Correlation

Discussion

The instrument showed good internal consistency. This result was more favorable in the women sample. This can be justified by the low sampling power among men. Nevertheless, considering the criteria by Hair et al.[19] based on the sample size, we observed that the values of factorial loadings found in each one of the factors showed good correlation between the items of the NAQ-R and their factors. The items "Being ordered to do work below your level of competence" of Factor I (work-related bullying) and "Spreading of gossip and rumors about you" of Factor II (personal bullying) presented high values in the sample of men, showing that these acts are the most appropriately measured. Among women, the item "Having allegations made against you" stood out.

We found that the extraction of factors by sex showed distinct results, which may point to the sensitivity of the instrument to detect gender differences. While among men two different factors compatible with work-related and personal bullying were identified, among women, a single dimension was identified, more related to personal bullying. This result can be associated with the way men and women are treated by society, where abusive acts against women mainly aim at their personal disqualification, sustained by their status as a women. Although men work may be criticized, the fact that it is produced by men is not part of the criticism.

The dimensions identified in the men sample, personal and work-related bullying, are consistent with those found in other studies that used the NAQ-R[4,10]. However, we did not find studies that produced analysis by sex, so that we could not compare if the differences identified here are compatible with other men and women populations. Nevertheless, literature has shown there is an uneven distribution of power that produces striking differences between men and women, with undeniable disadvantage for women[22].

The result in the women sample put forward the assumption of the one-dimensionality of the instrument when applied in the female population, considering that all items are measuring a single construct.

With some items showing very low factorial loadings, we believe that some questions of the instrument need to be reviewed and even assessed for permanence in the scale. One of the examples is item 22: "Threats of violence or physical abuse or actual abuse". In Italy, Giorgi et al.[4] opted to use a reduced version consisting of 17 items, because, according to the authors, five items were considered unsuitable for their local reality. Considering the definition by Hirigoyen[23,24] concerning the phenomenon and the subtle way that bullying takes place, becoming a target for real violence, means that abusive behavior no longer remains invisible, endangering even the victims' physical integrity, and thus, perhaps, not being bullying anymore. In some cultures, this sort of behavior can even be considered a crime including more severe connotations[3]. However, despite this and other items presenting low commonalities, we opted to keep them in the analysis, since their exclusion did not reveal differences in the reliability test.

This study also does not consider NAQ-R an exhaustive instrument, there may be other behaviors that characterize bullying that are not contemplated by the questionnaire. This position is also defended by Salin[25], who understands that not all behaviors have the same gravity.

By verifying external validity, the tetrachoric correlation test showed how the NAQ-R dimensions correlate with the investigated constructs. Among men, it means that work-related bullying is associated with worsen self-reported health, a result that is repeated when personal bullying is concerned, a dimension that is also correlated to job dissatisfaction. Similarly, among women, the dimension found is associated with worsen self-reported health and job dissatisfaction.

This result is compatible with a study on bullying at work and its association with quality of work environment[26]. It is also corroborated by the study by Sales[27], carried out with cleaning workers. The author found that 50% of those who reported to be bullying victims were also unhappy at work.

Fiabane et al.[28] investigated workers being evaluated due to psychological problems, possibly linked to bullying. Their study showed that individuals who had suffered bullying at work and who continued working in the same place showed higher levels of social dysfunction and lower level of job satisfaction than those who took the initiative of changing their jobs.

The respondents had no problems in understanding the instrument questions, what decreased the possibility of bias. The use of answer sheets certainly helped the subjects to choose the alternative that best reflected the situation experienced by them regarding frequency of abusive behaviors.

The prevalence of bullying found in this study by means of Leyman's criteria is compatible with the results found by other researchers. Tsuno et al.[3], using the same instrument and the same

criteria in a sample of civil servants from Japan, found a prevalence of 9.0% of bullying at work. In this study, the results are inaccurate regarding the differences between men and women. However, other consulted authors confirm that women are more subject to bullying than men[29,30]. Besides, bullying against women is different as it often has sexual or misogynistic connotations[31].

Due to these results, we believe that NAQ-*R* has an acceptable performance for detecting workplace bullying, as it is capable of identifying negative actions that characterize this type of abuse.

Authors' contribution

Silva IV contributed with the literature review, definition of study design, preparation of the data production instrument, supervision and participation in the production and systematization of the data, analysis and interpretation of results, and writing of the article. Aquino EML participated in the definition of study design, analysis and interpretation of results, and writing of the article. Pinto ICM participated in the definition of the study design, and contributed in the reviewing and writing of the article.

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