Resilience and the meaning of nurses' work in the COVID-19 pandemic

Resiliência e o significado do trabalho de enfermeiros na pandemia de COVID-19

Resiliencia y el significado del trabajo de los enfermeros durante la pandemia de COVID-19

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Abstract

Objective: To verify and correlate resilience and meaning of work in hospital nurses during the COVID-19 pandemic.

Method: This is a descriptive and correlational study, carried out between June and November 2021, with 164 nurses from two hospitals in São Paulo using the Connor-Davidson Resilience Scale and the *Inventário do Significado do Trabalho* (Meaning of Work Inventory). The data were analyzed using descriptive and inferential statistics, Pearson's correlation test, Kruskal-Wallis test, Student's t test, Dunn's test, Spearman's correlation test, Univariate Analysis of Variance, Shapiro-Wilk normality test, Levene's test. The statistical significance value adopted was 5% (p ≤ 0.05).

Results: Mean age 37.54 years (SD = 8.52), with 81.1% (133) female and mean resilience of 76.98 (SD = 11.32). Significant positive correlations were found between education, age and resilience with the attributes "Source of achievement and economic independence", "Expression of respect and acceptance", "Source of challenge, responsibility and livelihood", "Challenging", "Economic growth", "Feeling pleasure and protection", "Contributing socially and be assisted" and "Being recognized";

Conclusion: There was a correlation between resilience and the meaning of work, helping to face the adversities encountered in the COVID-19 pandemic.

Resumo

Objetivo: Verificar e correlacionar a resiliência e o significado do trabalho em enfermeiros hospitalares no contexto da pandemia de COVID-19.

Método: Estudo descritivo e correlacional, realizado entre junho e novembro de 2021, com 164 enfermeiros de dois hospitais de São Paulo com os instrumentos a Escala de Resiliência Connor-Davidson e o Inventário do Significado do trabalho. Os dados foram analisados por meio da estatística descritiva e inferencial sendo adotados os seguintes testes: Teste de correlação de Pearson; Teste de Kruskal-Wallis; Teste t de Student; Teste de Dunn; Teste de correlação de Spearman; Análise de Variância Univariada; Teste de normalidade de Shapiro-Wilk; Teste de Levene. O valor de significância estatística adotado foi de 5% (p ≤ 0,05).

Resultados: Média de idade 37,54 anos (DP = 8,52), sendo 81,1% (133) do sexo feminino, média da resiliência 76,98 (DP=11,32). Correlações significativas positivas foram encontradas entre: escolaridade, idade e a resiliência com os atributos "Fonte de realização e independência econômica", "Expressão de respeito e de acolhimento", "Fonte de desafio, responsabilidade e sustento", "Desafiar-se", "Crescer economicamente", "Sentir prazer e proteção", "Contribuir socialmente e ser assistido" e "Ser reconhecido";

Conclusão: Houve correlação da resiliência com o significado do trabalho, colaborando com o enfrentamento das adversidades encontradas na pandemia de COVID-19.

Resumen

Objetivo: Verificar y correlacionar la resiliencia y el significado del trabajo de enfermeros hospitalarios en el contexto de la pandemia de COVID-19.

Método: Estudio descriptivo y correlacional, realizado entre junio y noviembre de 2021, con 164 enfermeros de dos hospitales de São Paulo, con dos instrumentos: la Escala de Resiliencia Connor-Davidson y el Inventario del Significado del Trabajo. Los datos fueron analizados por medio de la estadística descriptiva e inferencial y se adoptaron las siguientes pruebas: Prueba de correlación de Pearson, Prueba de Kruskal-Wallis, Test-T de Student, Prueba de Dunn, Prueba de correlación de Spearman, Análisis de Varianza Univariada, Prueba de normalidad de Shapiro-Wilk y Prueba de Levene. El valor de significación estadística adoptado fue del 5 % (p ≤ 0,05).

Resultados: Promedio de edad 37,54 años (DP = 8,52), el 81,1 % (133) de sexo femenino, promedio de resiliencia 76,98 (DP = 11,32). Se encontraron correlaciones significativas entre: escolaridad, edad y resiliencia con los atributos "fuente de realización e independencia económica", "expresión de respeto y de acogida", "fuente de desafío, responsabilidad y sustento", "desafiarse", "crecer económicamente", "sentir placer y protección", "contribuir socialmente y ser asistido" y "ser reconocido".

Conclusión: Hubo correlación de la resiliencia con el significado del trabajo, lo que ayudó a enfrentar las adversidades encontradas en la pandemia de COVID-19.

Introduction

SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) represented one of the most acute and serious health problems in recent decades, as it placed all countries under extreme medical conditions, causing healthcare professionals a high level of stress and need to develop resilience.[1]

Moments of crisis, by definition, tend to generate reactions and behaviors guided by the feeling of chaos and panic in the populations. The establishment of a welcoming and safe work environment is crucial to reducing the social and psychological impacts arising from the uncertainty and insecurity present in the daily lives of different institutions and workers.[1]

In this regard, studies demonstrate that outbreaks affect the psychological state of members of a society. The initial waves of the coronavirus disease 2019 (COVID-19) pandemic in China caused more than half of the population to experience mental health impacts.[1-5]

At the peak of the crisis caused by the coronavirus, indications showed that nurses who had adequate levels of resilience coped better with the impact of the COVID-19 pandemic, resulting in a reduction in anxiety, post-traumatic stress, emotional exhaustion and depression, consequently providing safer assistance.[6,7]

Resilience is a personal psychological condition defined as the process of adjusting, managing, and adapting to significant sources of emotional changes or traumatic experiences. Resources within the individual, in their life and work environment, facilitate the ability to adapt and recover in the face of adversity.[2-5]

Work is a fundamental condition for humanity. According to Marxist theory, which recognizes that work is the modification of the element through workers' action, we can summarize that at every moment, society and work, including the COVID-19 pandemic, present an immensity of synergies. In this regard, workers purposefully carry out their work in a way that generates value for themselves, modifying the element according to their needs. On the other hand, Durkheim introduces the idea that modern work would generate loss of collective identities, causing individualization of social relations. Furthermore, society would only suffer occasional adjustments. However, work is not just an element, but its ideas, beliefs and values, like human reasons are motivating powers for work, and performing good quality work does not only depend on rigorous instructions and procedures, but counts on workers' zeal and engagement in their activities.[3-6]

This scenario means that nurses increasingly need to develop the ability to adapt to changes in order to survive and grow progressively, and, at the same time, their fundamental role is to guide people.[8]

There are few studies on meaning of work and psychological resilience in nurses; however, there is a great need for advances in theoretical knowledge, applied to the theme of resilience and meaning at work, as well as on the importance of knowing the aspects of work environments, which promote protective conditions for professionals in their work

spaces. Therefore, this study aims to verify and correlate the resilience and meaning of work in hospital nurses during the COVID-19 pandemic.[2-4,6]

Methods

This is a descriptive, correlational and quantitative study, developed with nurses in two private hospitals in the city of São Paulo, Brazil, accredited with excellence by the National Accreditation Organization and designated during the COVID-19 pandemic to exclusively care for cases of COVID-19. The development of this study was carried out in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) methodological scheme. The study population was intentional and non-probabilistic, consisting of 164 nurses.

To calculate the sample, a statistical formula was used in which N= sample size, with 310 active nurses on the hospital workforce, E0= tolerable sampling error = 4%, n0= first approximation of the sample size = 310, reaching minimum sample size of 155 subjects.

Data collection took place between June and November 2021, a period that corresponded to the second wave of the COVID-19 pandemic. Nurses with at least three months of work at the institution, who have worked during the COVID-19 pandemic, with an email address and fully answered the data collection instrument electronically were included. Forty nurses who answered incompletely the data collection instruments were excluded. Moreover, 164 nurses answered completely the data collection instruments and the remaining 106, who would complete the sample of 310, did not answer the survey.

Data collection was carried out through the individual and electronic application of three instruments, following the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) criteria. Participants only answered after electronically accepting the Informed Consent Form, consisting of a chunk of sociodemographic questions, the Connor-Davidson Resilience Scale (CD-RISC-25BRASIL) and the *Inventário do Significado do Trabalho* (Meaning of Work Inventory), both translated and validated in Brazil. Independent variable assessment was prepared by the author based on professional experience and literature and includes data collection (age, gender, marital status, education, position held, time working at the research site, whether they have another employment relationship and if practice physical exercise.[7-10]

The CD-RISC-25BRASIL is a 25-item self-report measure of resilience, which assesses a 5-point scale from 0 ("not true") to 4 ("true almost all of the time"), designed to provide a measure valid and reliable model of resilience and establish reference values for being resilient or not. Its result is given by the sum of the 25 items and the higher the score, the greater the state of resilience. The scale reliability was calculated using Cronbach's alpha, revealing an index of 0.82.[7-9]

The Meaning of Work Inventory is made up of 68 affirmative sentences about work. For each item, participants present their five-point Likert-type responses, ranging from 0 (Not at all true), 1 (Rarely true), 2 (Sometimes true), 3 (Often true) to 4 (Almost always true), for both evaluative and descriptive attributes. The score is a mean of the questions asked in each attribute, and the higher the mean, the greater meaning the attribute has for the person being researched. Valuable attributes are those that define how work should be, and descriptive attributes are those that define what work is concretely like. The scale reliability was calculated using Cronbach's alpha, revealing an index of 0.83.[10-14]

The instruments were transcribed into the RedCap software, where the forms were tested before being released to the sample, and no adjustments were necessary after the test was carried out.

Data were analyzed using descriptive and inferential statistics, using Pearson's correlation test, Kruskal-Wallis test, Student's t test for independent samples, Post hoc analysis, Dunn's test with Bonferroni correction for multiple comparisons Spearman's correlation test, Univariate Analysis of Variance (ANOVA,; Shapiro-Wilk normality test and Levene's test. The statistical significance value

adopted was 5% (p ≤ 0.05). The SPSS Statistics software, version 28.0, was used.

The present study was assessed and approved by the Research Ethics Committee of *Hospital São Luiz Itaim,* São Paulo, under Opinion 4.487.876 (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration 40158720.9.0000.0087). Participants signed the Informed Consent Form for participation, applied electronically with registration and archive of all.

Results

A total of 164 nurses answered the data collection instruments, revealing a mean age of 37.54 years (SD=8.52). The majority were female (81.1%, n=133), married (53.66%, n=88), with specialization (73.78%, n=121), and between one and five years of experience in the institution (43.29%, n=71). It is noted that the vast majority of nurses are new to the institution. The predominant role was that of clinical nurse (84.7%, n=139), while 80.49% (n=132) had no other employment relationship. Additionally, 61.59% (n=101) did not perform physical activities, as indicated in Table 1.

It can be seen in Table 2 that, in the evaluative type, two subdomains had the highest scores, such as "Expression of respect and welcoming", with 3.24, and "Source of achievement and economic independence", with 3.23. In the descriptive type, the two highest scoring were "Economic growth", with 3.35, and "Challenging", with 3.28.

Chart 1 and 2 summarize the correlations found between sociodemographic variables, resilience and meaning of work. It is worth highlighting, in Chart 1, that only education variable showed a significant and positive correlation with most of the evaluative and descriptive attributes of Meaning of Work Inventory. Chart 2 shows a significant and negative correlation with age. All other sociodemographic variables studied did not present significant correlations.

Table 1. Sample characterization regarding categorical sociodemographic variables

Variables	Categories	n(%)
Gender	Male	31(18.90)
	Female	133(81.10)
Marital status	Single	47(28.66)
	Married	88(53.66)
	Widower	5(3.05)
	Divorced or separated	13(7.93)
	Others	11(6.71)
Education	Graduated	42(25.61)
	Specialization	121(73.78)
	Master's degree	1(0.61)
How long have you worked at the institution?	Less than 1 year	14(8.54)
	From 1 to 5 years	71(43.29)
	From 6 to 10 years	50(30.49)
	From 11 to 15 years	19(11.59)
	From 16 to 20 years	1(0.61)
	More than 20 years	9(5.49)
Position	Nurse	139(84.76)
	Reference nurse	13(7.93)
	Nursing supervisor	12(7.32)
Has another relationship/job	Yes	32(19.51)
	No	132(80.49)
Practice physical exercises	Yes	63(38.41)
	No	101(61.59)

The resilience level was 76.98 (SD=11.32) with a median of 76.00.

Table 2. Study sample characterization in relation to the score for each evaluative type and for each descriptive type of the Meaning of Work Inventory

Category	Subdomain	n	Mean	SD	Median	Min.	Max.
Value	Source of achievement and economic independence	164	3.23	0.44	3.20	2.27	4.00
	Expression of respect and welcoming	164	3.24	0.48	3.19	2.00	4.00
	Self-affirmation	164	2.86	0.48	2.89	1.33	3.89
	Dehumanizing and exhausting	164	1.97	0.64	2.00	0.50	3.38
	Representative of difficulties	164	2.46	0.63	2.50	0.67	4.00
	Source of challenge, responsibility and livelihood	164	3.08	0.48	3.00	1.70	4.00
Descriptive	Being dehumanized	164	0.84	0.87	0.50	0.00	3.50
	Feeling exhausted and under pressure	164	2.17	0.75	2.25	0.50	4.00
	Facing demands and difficulties	164	2.64	0.60	2.75	1.00	4.00
	Being responsible (people)	164	3.06	0.50	3.00	1.63	4.00
	Challenging	164	3.28	0.46	3.28	2.11	4.00
	Economic growth	164	3.35	0.49	3.44	1.89	4.00
	Feeling pleasure and protection	164	3.24	0.53	3.20	1.00	4.00
	Contributing socially and being assisted	164	3.19	0.48	3.13	2.00	4.00
	Being recognized	164	2.98	0.56	3.00	1.13	4.00
	Equitable payment	164	2.68	0.65	2.83	1.00	4.00

SD - Standard Deviation; Min - Minimum; Max - Maximum

Chart 1. Statistically significant and positive correlation found

Correlation statistically significant and positive	Test used	Value found		Sociodemographic variable that was correlated
		Coef.	p-value	
Meaning of Work Inventory value type				
"Source of achievement and economic independence"	Spearman's test	0.187	0.016	Education
	Pearson's test	0.657	< 0.001	Resilience
"Expression of respect and welcoming"	Spearman's test	0.198	0.011	Education
	Pearson's test	0.626	< 0.001	Resilience
"Source of challenge, responsibility and livelihood	Spearman's test	0.159	0.042	Education
	Pearson's test	0.591	< 0.001	Resilience
"Self-affirmation"		0.185	0.018	Resilience
"Representative of difficulties"		0.488	< 0.001	Resilience
Meaning of Work Inventory descriptive type				
"Feeling exhausted and under pressure"	Pearson's test	0.213	0.006	Resilience
"Facing demands and difficulties"		0.183	0.019	Resilience
"Being responsible (people)"	Pearson's test	0.478	< 0.001	Resilience
"Challenging"	Spearman's test	0.158	0.043	Education
	Pearson's test	0.505	< 0.001	Resilience
"Economic growth"	Spearman's test	0.205	0.009	Education
	Pearson's test	0.524	< 0.001	Resilience
"Feeling pleasure and protection"	Spearman's test	0.176	0.024	Education
	Pearson's test	0.618	< 0.001	Resilience
"Contributing socially and being assisted"	Spearman's test	0.223	0.004	Education
	Pearson's test	0.648	< 0.001	Resilience
"Being recognized"	Spearman's test	0.184	0.018	Education
	Pearson's test	0.602	< 0.001	Resilience
"Equitable payment"	Pearson's test	0.477	< 0.001	Resilience
Resilience	Spearman's test	0.196	0.012	Education

Chart 2. Statistically significant and negative correlation found

Statistically significant and negative correlation	Test used	Value found		Sociodemographic variable that was correlated
		Coef.	p-value	
Meaning of Work Inventory value type				
"Source of achievement and economic independence"	Pearson's test	-0.164	0.036	Age
"Expression of respect and welcoming"		-0.168	0.031	
"Self-affirmation"		-0.186	0.017	
"Dehumanizing and exhausting"		-0.224	0.004	
"Source of challenge, responsibility and livelihood"		-0.288	<0.001	
Meaning of Work Inventory descriptive type				
"Feeling exhausted and under pressure"	Pearson's test	-0.264	<0.001	Age
"Facing demands and difficulties"		-0.179	0.022	
"Being responsible (people)"		-0.233	0.003	
"Challenging"		-0.253	0.001	
"Economic growth"		-0.164	0.036	
"Equitable payment"		-0.196	0.012	

Discussion

This study demonstrated that there is a significant and positive correlation between evaluative and descriptive attributes and resilience. Education has been configured as the only variable that presented a positive and significant correlation with the Meaning of Work Inventory attributes. On the other hand, age showed a significant negative correlation with the Meaning of Work Inventory attributes.

The results of this study showed that the mean resilience score of nurses during the COVID-19 pandemic was 76.98 (± 11.32), higher than that reported by Huang *et al.* among the clinical staff of the Radiology Departments: 65.76 (± 17.26) for Afshari *et al.*; 61.18 (± 14.8) among Iranian nurses; 69.00 (± 15.82) among Indian healthcare

professionals; and 64.28 (±15.99) among Turkish nurses.[15-20]

The relationship between age and resilience was not significant, however the mean age in the present study was 37.54, with SD = 8.52, higher than nurses' mean in the Philippines, which was 30.94 years, with SD = 6.67. Increasing age and greater experience have a positive relationship with resilience.[15-17]

Women showed no statistical difference in the resilience score, 76.84 (± 11.37) compared to men 77.58 (± 11.29), contrary to what was reported by Afshari *et al*. and by Dai *et al*., who demonstrated that there is a significant difference between male and female medical staff, possibly because female staff had higher levels of concern.[14-20]

A comparison, before the COVID-19 pandemic, was made with university students, between May 2012 and May 2016. 244 students were selected from the Attikon University Hospital and the Athens Naval Hospital, in Greece. The mean resilience score of this group was 60.97 (±18.59), lower than the score found in this study. Another important point to highlight was the negative correlation with age and positive correlation with the years of education of the group.[21]

In the present study, no significant correlation coefficients were observed between marital status and resilience with STI, the same result reported by Afshari *et al*.[14-16]

Education is a contributing factor to a higher resilience score. In the proposed model, significant relationship coefficients were observed at different levels of education so that an increase in the level of education led to a higher CD-RISC-25BRASIL score. In fact, it can be pointed out that with increasing age, work experience and training of nurses, in addition to their exposure to stress, their personal skills to deal with critical and stressful situations develop.

The progress of such skills helps in the creation of different coping strategies, which can facilitate adaptation and effective action, in addition to promoting resilience in such situations.[19-22]

When the topic is learning, it is clear that prior training and previous experiences contribute to better adaptability and have a protective role in hospital settings, as presented in several studies, with 201 Turkish nurses, 370 Turkish nurses, 128 Korean nurses and 281 Saudi nurses. Furthermore, the support that the institution provides is fundamental for promoting resilience, especially for new workers, who have less resilience when compared to older workers. Moreover, the present study demonstrated significant and positive correlation coefficients with education, age and physical activity.[19-25]

Increased physical activity promotes improved blood circulation and metabolism, effectively reducing fatigue-inducing factors, strengthening mental and emotional balance, which, in turn, improves the quality of resilience.[21,26,27] In the present study, practice of exercise showed a positive relationship with resilience, confirming the work carried out with 54 nurses from Korea, which demonstrated statistically significant improvements in the physical and psychological health of the intervention group with practice of physical exercise.[15,16]

As physical activity levels increase, negative emotions, such as stress, decrease and constructive emotions and positive thinking increase, generating greater resilience for nurses.[14,16,19,23,24]

Resilience is a skill that can improve job satisfaction.[25-29] In the present study, a statistically positive correlation was observed between resilience and both evaluative and descriptive types, such as "Source of fulfillment and economic independence", "Feeling pleasure and protection", "Being recognized".

The work structure aims to transform attitudes in such a way that employees are coordinated to develop positive behaviors in relation to the tasks performed, the institution in which they work and themselves. The result of these practices at work reveals an important indicator of an effective organization.[27-31]

For work to have meaning, work characteristics must be associated with the reasons that encourage professionals to improve themselves, such as satisfactory working conditions, acceptable wage, recognition, health preservation, stimulating and varied work, autonomy and opportunity to carry out tasks appropriately.[23,24,29] This data was observed in this study, which showed the highest absolute frequency in "Source of achievement and economic

independence", "Expression of respect and acceptance", "Economic growth" and "Feeling pleasure and protection".

Still on this topic, it was observed in this research that there were significant and positive correlation coefficients of resilience with the descriptive types "Feeling exhausted and under pressure", "Facing demands and hardness" and "Being responsible". The descriptive types demonstrate how work happens even if assistance brings exhaustion and pressure due to the harshness of daily demands. Nurses' resilience makes them feel safe, psychologically, and enjoy patient care, contributing socially and generating a sense of responsibility towards others, but they expect the organization to reciprocate equitably and Being recognized.[25-29]

When organization takes care of workers, they change their self-perception and the meaning they attribute to work. However, nurses who work in hospital care and live with a high mortality rate or patients with sequels end up under pressure and feel exhausted. Resilience and education appear as protective factors and show a statistically positive correlation with descriptive types, such as "Challenging", "Economic growth", "Feeling pleasure and protection", "Contributing socially and be assisted" and "Being recognized", which offers new meanings to work and even life. However, if the institution does not provide professionals with the opportunity for development, they do not consider themselves rewarded, causing dissatisfaction, demotivation and conflicts at work.[24-29]

The fact that the participating nurses stated that the meaning of real work lies in the attributes "Feeling exhausted and under pressure", "Facing demands and hardness", "Being responsible (people)", "Challenging", "Economic growth", "Feeling pleasure and protection", "Contributing socially and being assisted", "Being recognized" and "Equitable payment", even in intense, stressful conditions and in a pandemic scenario, can be considered an indicator of the great importance they attached to their profession.[24-29]

The levels of psychological resilience and the meaning of nurses' work represent an essential role in the effective response to all these problems, as resilience makes it possible to deal with the difficulties they face in the workplace and is also a strong shield that protects against the adversities of the profession.[24-31]

Feelings of being adequately prepared and confident to complete tasks were associated with resilience. Likewise, a study carried out in Korea showed that nurses who felt pleasure in their work had a higher level of resilience. In this regard, our results are consistent with the results of Han *et al.* (2020) and Jung *et al.* (2021), highlighting the fact that nurses participating in the study state that they perform their work with pleasure, recognition and social contribution.[25,27-31]

One consideration for the results of this study relative to other studies during the COVID-19 pandemic is the positive correlation with the significant and negative impact of COVID-19 on healthcare workers' well-being, as reported by other researchers.[31-33] Understanding what is most engaging and effective interventions to increase resilience is crucial to nurses' well-being, which impacts the quality of patient care.

Given recent evidence, which demonstrates that resilience can reduce the negative impact of stressful events in the work environment that affect health professionals and identify the factors that contribute to increasing resilience as well as the recognition of intervening factors that permeate the feelings and emotions experienced at work and interfere with meaning. Resilience and the meaning of personal and, consequently, professional work have the potential to help nurses adapt successfully to the challenges of life and work, in addition to maintaining well-being, by nurses more resilient, higher quality of care, achieving better results for the institution.

The main limitations of this study were its timing, as it was not carried out during the first wave of the COVID-19 pandemic, and the geographic context of the study, when most healthcare workers received vaccination, diluting the effect of the COVID-19 outbreak. Furthermore, during the first wave, training and skills development were intensified, which could bias the results.

Contributions, such as resilience and meaning of work, should be studied longitudinally.

Furthermore, it must be carried out in other work environments, in order to encourage new discussions and investigations on the topic, both in hospital and in different healthcare settings, allowing for the deepening and refinement of knowledge in the area.

Conclusion

During the second wave of the COVID-19 pandemic, nurses showed a high level of resilience with a significant and positive correlation in most Meaning of Work Inventory attributes. Meanwhile, in the sociodemographic variables studied, only education demonstrated a positive correlation with resilience and attributes of meaning. The other demographic variable, age, showed a negative correlation with the Meaning of Work Inventory attributes. It is worth mentioning that the research participants demonstrated a high level of psychological resilience and gave the highest scores in the descriptive attributes that represent their current work as responsible, challenged, can grow economically and feel pleasure and protection with their work.

Collaborations

Caroccini TP, Balsanelli AP, Neves VR, Silva SM, Belasco AGS and Baptista PCP contributed to study design, project implementation, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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