

## Quality of life and work engagement among nursing staff at the start of the COVID-19 pandemic

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**Abstract** *This article investigates the correlation between work engagement and work-related quality of life among nursing staff at a public hospital in São Paulo State, at the onset of the COVID-19 pandemic. A descriptive, correlational, cross-sectional study of nursing personnel was conducted from December 2020 to January 2021, using the Brazilian versions of the Work & Well-being Survey (Utrecht Work Engagement Scale - UWES) and the Work-related Quality of Life (WRQoL) scale, following Walton's model. Nursing staffs returned a strong positive correlation ( $r \geq 0.70$ ) between the social integration domain of the WRQoL and the vigour dimension of the UWES ( $r = 0.88$ ;  $p < 0.001$ ); a moderate positive correlation ( $r \geq 0.40 \leq 0.69$ ) between working conditions (WRQOL) and the vigour ( $r = 0.40$ ;  $p < 0.001$ ), dedication ( $r = 0.40$ ;  $p < 0.001$ ) and overall score ( $r = 0.41$ ;  $p < 0.001$ ) dimensions of the UWES. Correlations were positive and weak ( $r \leq 0.39$ ) for the other WRQoL domains and the UWES dimensions. It was concluded that personnel with satisfactory levels of quality of life tend to show higher levels of engagement at work. At the onset of the COVID-19 pandemic, nursing professionals were strongly engaged and satisfied with their work-related quality of life.*

**Key words** *Work Engagement, Job Satisfaction, Quality of Life, Workers' Health, Nursing Staff*

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## Introduction

The COVID-19 pandemic raised major concerns as to the physical and mental health of nursing staffs, due to the overwork entailed by increasing hospital admissions. Extended working hours led to physical and mental fatigue. Added to which, concerns over exposure to the SARS-CoV-2 virus, the chance of infecting relatives, the risk of shortfalls in safety equipment and difficulties resulting from increased absenteeism further exacerbated these workers' precarious working conditions<sup>1-4</sup>.

This scenario further increased nursing leaders' responsibility for developing strategies to help increase team engagement, ensure sustainable performance and guarantee safe, quality care. In that context, these professionals faced a window of opportunity for making a difference in health institutions, showing the positive impact of deploying leadership skills and bringing change<sup>5</sup>.

Work engagement is defined as a positive, rewarding work-related mental state, involving worker satisfaction with the job and a feeling of well-being. It is characterised by high levels of energy and resilience (vigour), strong identification with the job, a sense of significance, enthusiasm, inspiration, pride and challenge (dedication), all of which generates positive job-related emotions and good job performance among workers, causing a sense of belonging, satisfaction and duty done (absorption)<sup>6-8</sup>. According to the literature, the higher the level of nursing staffs' work engagement, the higher the quality of care provided by the teams. Nursing managers are essential to promoting work engagement among team members<sup>9</sup>.

Working conditions, work environment and overwork are factors that lead to emotional burnout in workers, which can influence their quality of life adversely. Accordingly, quality of life studies are gaining importance in organisations, given the need to understand the factors that influence workers' lives positively in their professional and personal relationships<sup>10-12</sup>.

Work-related quality of life (WRQoL) is directly related to job satisfaction, work environment hygiene, physical safety, mental health and well-being, interpersonal relationships, management and leadership style, ergonomics applied to machine use, tools and concern for workers' health<sup>12-14</sup>.

As work engagement can influence WRQoL<sup>7</sup>, it is important to know levels of work engagement and WRQoL among nursing professionals,

particularly in the context of the COVID-19 pandemic. This study will thus help to understand better their behaviour at a time of great uncertainty and challenges. It will also produce knowledge to inform to implementation of measures to improve nursing staffs' performance during the pandemic by positively impacting their commitment and the quality of care, thus reducing staff turnover and related costs.

Accordingly, this study investigated the correlation between work engagement and work-related quality of life among nursing personnel at a public hospital in São Paulo state at the onset of the COVID-19 pandemic.

## Methods

This descriptive, correlational, cross-sectional study was conducted in December 2020 and January 2021 with nursing personnel at a medium-sized philanthropic general hospital (210 beds) in São Paulo state, a referral hospital for the population of approximately 450,000 of the 18 municipalities that make up the 5<sup>th</sup> Regional Health Directorate of São Paulo State and the only hospital in the region that handles high-complexity procedures, high-risk pregnancies, neurosurgery, orthopaedics, nephrology, cardiovascular surgery and interventional cardiology procedures. The hospital has 30 adult intensive care beds and 10 neonatal and paediatric intensive care beds. Of the care provided there, 85% is for patients in Brail's public Unified Health System (*Sistema Único de Saúde - SUS*).

The study population comprised 606 nursing personnel at the hospital (145 nurses, 414 nursing technicians and 47 nursing auxiliaries) and excluded personnel of an outsourced sector occupying part of the hospital's physical structure and operating under external managers.

Sample calculation estimated a sample of 284 participants, to a 95% confidence level, 5% margin of error, 95% reliability and 20% addition for losses. Sampling was by convenience. All 606 personnel eligible for inclusion in the study were invited to respond to the questionnaires. Of these, 362 (59.7%) agreed to participate in the study; the other 244 (36.8%) did not respond to the invitation. Incomplete questionnaires were excluded from the sample, which ultimately numbered 341 nursing personnel (56.3% of the study population), comprising 93 nurses, 217 nursing technicians, 27 nursing auxiliaries and four participants of unspecified job category.

Data were collected using three self-applicable instruments provided through the Electronic Research Data Capture (REDCap) platform within the criteria established by Brazil's General Data Protection Law, namely:

(a) one instrument prepared by the authors, containing sociodemographic variables and participants' particulars, including: gender, age, marital status, children, education, time since graduation, means of transport used and travel time to work, position and time at the hospital.

(b) the Brazilian version of the Utrecht Work Engagement Scale (UWES), adapted and validated by Vazques *et al.*<sup>15</sup>. The UWES consists of 17 questions to assess job satisfaction, considering three aspects of work engagement: vigour (six questions), constituted by high levels of energy and resilience, willingness to invest effort, not tiring easily and persistence in dealing with difficulties; dedication (five questions), comprising feeling enthusiasm and pride in the work, which brings inspiration and meaning; and absorption (six questions), which consists in being totally immersed in the job, finding it difficult to detach from it, time passing quickly and workers' forgetting everything around them<sup>15</sup>. Responses to the UWES scale questions are scored on a seven-point Likert scale, where: 0 = never; 1 = almost never; 2 = at times; 3 = regularly; 4 = frequently; 5 = almost always; 6 = always. Scores are calculated as the arithmetic average of responses in each dimension, which ranges from zero to six<sup>11</sup>.

(c) a version adapted from the Walton model Work-related Quality of Life Assessment Scale validated in Brazil by Timossi *et al.*<sup>16</sup>. The instrument comprises 32 affirmations distributed across eight domains: Adequate and Fair Compensation (two affirmations), relates to adequate income from the position, which should not deviate from the average salary on the employment market; Safe and Healthy Working Conditions (five affirmations), refers to lawful working hours, premium overtime pay and safe conditions that minimise physical and mental health risks; Immediate Opportunity to Use and Develop Human Capabilities (five affirmations), comprising the conditions offered to employees to develop technical and behavioural skills through feedback, to know the processes of which their work forms part, to plan their activities and have autonomy; Future Opportunity for Continued Growth and Security (four affirmations), requires employee's to be able to grow and advance in the company; Social Integration in the Work Organisation

(four affirmations) requires harmonious personal relationships, fellowship among members of the organisation and freedom from prejudice, inequality and favouritism; Constitutionalism in the Work Organisation (four affirmations), given by employees' enjoying their rights and freedom of expression, fairness and privacy; Work and the Life Space (three affirmations) relates to how the work impacts employees' personal, social and family life and ensures conditions for employees to enjoy their free time with their families; and the Social Relevance of Work Life (five affirmations), reflects employees' views of the company's social responsibility and its benefits to society<sup>16</sup>. The WRQoL Assessment Scale showed high internal consistency in the validation study in the Brazilian population (Cronbach's alpha = 0.96) and was considered suitable to support work-related quality of life studies in Portuguese<sup>16</sup>. Responses to the WRQoL questionnaire are given on a five-point Likert scale, where: 1 = totally disagree; 2 = disagree; 3 = neither disagree nor agree; 4 = agree; and 5 = totally agree. The higher the score, the more satisfied is the respondent (five being the maximum for each criterion examined)<sup>16</sup>.

The instruments they were made available electronically on the Electronic Research Data Capture (REDCap) platform, a free electronic data capture software with which research instruments can be developed and offers resources for collaboration, metadata workflow, security, auditing, and export to other statistics programmes<sup>17</sup>. Two trained volunteer nurses assisted the main researcher in data collection. The explanation preceding signing of the Declaration of Consent emphasised that the study involved no conflicts of interest with the hospital administration and that it was an anonymous study. After the consent process, participants were instructed to access the questions by way of a QRCode image, while those who were unable to access the QRCode were forwarded a link via WhatsApp, in which no participant could be identified. Participants had access to the questionnaire after reading and digitally signing the declaration of free and informed consent and thus agreeing to participate in the study. Each block of questions was preceded by the information necessary to answer the questions and the instructions as to the timeframe for answering the questionnaires were made clear.

The collected data were tabulated and analysed using the IBM-SPSS software, version 27.0 for Windows (SPSS, Inc., Chicago, IL, USA).

Descriptive measurements (relative and absolute frequencies, means and standard deviations) and inferential measurements (ANOVA and correlation test) were applied. A 5% level of significance was used ( $p \leq 0.05$ ) in all calculations.

Work engagement was examined by calculating mean scores for the UWES scale dimensions: overall score (17 questions), vigour (questions 1, 4, 8, 12, 15 and 17), dedication (questions 2, 5, 7, 10 and 13) and absorption (questions 3, 6, 9, 11, 14 and 16), following the statistical model proposed in the Preliminary Utrecht Work Engagement Scale (UWES) Manual<sup>18</sup>. The mean values were decoded and interpreted following the manual, i.e., 0 to 0.99 = Very low; 1 to 1.99 = Low; 2 to 3.99 = Medium; 4 to 4.99 = High; and 5 to 6 = Very high.

Work-related quality of life was examined by calculating mean scores for the eight domains of the scale. The mean scores obtained on the scale from 1 to 5 were converted to a scale from 0 to 100, enabling quality of life to be classified as: Unsatisfactory (scores from 0 to 24.99), Intermediate (25 to 75) and Satisfactory (75.1 to 100)<sup>16</sup>.

The UWES scale dimensions were compared with the participants' sociodemographic characteristics using the t-test or analysis of variance (ANOVA). The correlation between work engagement and work-related quality of life was examined using Pearson's test of correlation, considering r-values up to 0.39 to indicate weak correlation, values from 0.40 to 0.69, moderate correlation and 0.70 or higher, strong correlation<sup>6</sup>.

The study was approved by the research ethics committee in Opinion No. 4,349,861, of 20 October 2020.

## Results

The study participants were 341 nursing personnel: 93 (27.3%) nurses, 27 (7.9%) nursing assistants and 217 (63.6%) nursing technicians. Sociodemographic analysis showed that 89.4% were women; 73.3%, from 21 to 40 years old; 49.3%, married or in a stable relationship; 60.4% had children; 29.0% had graduated from one to less than 4 years earlier, and 27.6%, more than 10 years earlier. Most had worked at the institution for less than four years, while 34.9% had worked there from one to less than four years (Table 1).

As regards work engagement, nursing personnel returned high means for absorption (4.9) and very high means for vigour (5.2), dedication (5.6) and overall score (5.2) (Table 2).

Analysis of work engagement dimensions by sociodemographic variables found no statistically significant difference ( $p\text{-value} > 0.05$ ) between scores for work engagement dimensions by gender, marital status, time since graduation or length of service at the hospital (data not shown in Table 3). As in Table 3, nursing assistants showed lower levels of dedication than other professional categories ( $p=0.037$ ); nursing assistants and technicians showed lower levels of vigour than nurses and nursing managers ( $p=0.040$ ). Staff aged 51 years and over showed significantly higher levels of dedication ( $p < 0.001$ ) than younger personnel. Staff with children showed higher levels of dedication ( $p=0.034$ ), vigour ( $p=0.019$ ) and overall score ( $p=0.014$ ) than those without children.

Assessment of work-related quality of life found that most nursing personnel enjoyed moderate levels of WRQoL in the Adequate and Fair Compensation domain (51.9%). In the other domains, most staff reported satisfactory levels of WRQoL, particularly in the Social Relevance of Work Life domain, where this level of WRQoL was reported by the highest percentage of staff (76.5%) (Table 4).

As shown in Table 5, analysis of the correlation between quality of life and work engagement (Pearson's correlation test) found a strong, positive correlation ( $r \geq 0.70$ ) between WRQoL in the Social Integration in the Work Organisation domain and the vigour dimension of work engagement ( $r=0.88$ ;  $p < 0.001$ ); a moderate positive correlation ( $r \geq 0.40 \leq 0.69$ ) between WRQoL in the Safe and Healthy Working Conditions domain and the vigour ( $r=0.40$ ;  $p < 0.001$ ), dedication ( $r=0.40$ ;  $p < 0.001$ ) and overall score ( $r=0.41$ ;  $p < 0.001$ ) dimensions of work engagement. In the other WRQoL domains and work engagement dimensions, correlations were positive and weak (Table 5).

There was also a tendency for staff with satisfactory quality of life to return higher levels of work engagement. Note, however, that those displaying unsatisfactory levels of Social Integration, Constitutionalism and Social Relevance returned higher levels of work engagement (overall score) and absorption. Staff with unsatisfactory levels in Work and the Life Space showed stronger absorption (Table 5).

## Discussion

The sociodemographic profile of nursing staff in this study corroborated other studies and is con-

**Table 1.** Study participants' sociodemographic and professional characteristics. Barretos, São Paulo, Brazil, 2021.

Variables	n	%
Professional category		
Nursing assistant	27	7.9
Nursing technician	217	63.6
Nurse	93	27.3
Did not answer	4	1.2
Sex		
Female	305	89.4
Male	33	9.7
Did not answer	3	0.9
Age range (in years)		
≤20	6	1.8
21 to 30	123	36.1
31 to 40	127	37.2
41 to 50	60	17.6
≥51	15	4.4
Did not answer	10	2.9
Marital Status		
Married/Stable union	168	49.3
Single	134	39.3
Divorced/Separated	31	9.1
Widowed	5	1.5
Did not answer	3	0.9
Children		
Yes	206	60.4
No	131	38.4
Did not answer	4	1.2
Training time (in years)		
<1	30	8.8
≥1 and <4	99	29.0
≥4 and <7	57	16.7
≥7 and <10	57	16.7
>10	94	27.6
Did not answer	4	1.2
Time working at the hospital (in years)		
<1	63	18.5
≥1 and <4	119	34.9
≥4 and <7	60	17.6
≥7 and <10	37	10.9
≥10	60	17.6
Did not answer	2	0.6

Source: Authors.

sistent with the profile of Brazilian nursing personnel, particularly the predominance of nursing technicians and of women<sup>19-23</sup> despite the growing numbers of male staff in the profession<sup>24</sup>.

Evaluation of levels of work engagement among nursing staffs showed that they felt considerable concentration and pleasure connecting them to their work, as well as very high levels of energy and mental resilience, and involvement with and enthusiasm for their work. These results are consistent with those reported in other studies on work engagement among nursing personnel in Brazil<sup>14,25</sup> and other countries<sup>24,26,27</sup> and show that the study participants were strongly committed to and aligned with their work environment and job activities at the onset of the COVID-19 pandemic. Maintaining engagement in work entails deploying both personal and professional capabilities, as well as professional autonomy in the workplace<sup>28</sup>. In this study, nursing coordinators at the hospital scored highest, corroborating the literature, which reports higher levels of work engagement among nursing managers<sup>29</sup>.

Most of the staff assessed were found to enjoy satisfactory levels of WRQoL, mainly in relation to the workers' perceptions of the hospital's social responsibility, the quality of services provided and care for the workers. These findings show that the enterprise's investment in conditions favourable to employee well-being, which favour development and organisational justice, contribute to heightening workers' quality of life and work engagement<sup>30</sup>.

On the other hand, the participants returned intermediate levels of WRQoL in terms of appropriate pay for the job and equity criteria. This is a delicate situation for the whole nursing profession in Brazil, which suffers from wage inequalities and is poorly paid, leading personnel to hold more than one job. In combination with long working hours, WRQoL impaired by perceptions relating to fair and adequate compensation can potentiate a process of physical and emotional burnout and undermine staff performance<sup>31,32</sup>. Note also that remuneration is not considered to be a satisfaction factor that heightens WRQoL, but rather – when perceived to be fair and adequate – is a condition that helps to avert dissatisfaction<sup>33</sup> helping to avoid undermining WRQoL.

A study with nursing personnel at public health institutions in a Mexican city indicated that their greatest dissatisfaction related to wages and contractual rights. It emphasised that nursing staff should be adequately remunerated for their work in order to ensure them good WRQoL<sup>25</sup>.

When this study was conducted, the COVID-19 pandemic was already causing increased emotional suffering among nursing per-

**Table 2.** Nursing staff's work engagement. Barretos, São Paulo, Brazil, 2021.

UWES Dimensions*	†Min	‡Max	§Md	Average	Standard deviation	CI (95%) <sup>¶</sup>	Interpretation
Vigour	1.7	6.0	5.3	5.2	0.8	5.1-5.2	Very high
Dedication	2.0	6.0	5.8	5.6	0.6	5.5-5.7	Very high
Absorption	1.3	6.0	5.0	4.9	0.9	4.8-5.0	High
Overall score	1.7	6.0	5.4	5.2	0.6	5.1-5.3	Very high

\*UWES: Utrecht Work Engagement Scale; †Min: minimum; ‡Max: maximum; §Md: median; ¶CI95%: 95% confidence interval.

Source: Authors.

**Table 3.** Work engagement, by participants' sociodemographic characteristics. Barretos, São Paulo, Brazil, 2021.

Variables	Dedication Mean (±SD)	Absorption Mean (±SD)	Vigour Mean (±SD)	Overall Score Mean (±SD)
Professional category				
Nursing assistant	4.9 (±1.0) <sup>a</sup>	5.4 (±0.7) <sup>b</sup>	4.9 (±0.8) <sup>a</sup>	5.0 (±0.7) <sup>b</sup>
Nursing technician	5.1 (±0.8) <sup>b</sup>	5.6 (±0.6) <sup>b</sup>	4.8 (±1.0) <sup>a</sup>	5.2 (±0.7) <sup>b</sup>
Nurse	5.3 (±0.7) <sup>b</sup>	5.7 (±0.5) <sup>b</sup>	5.0 (±0.7) <sup>b</sup>	5.3 (±0.5) <sup>b</sup>
Nursing manager	5.5 (±0.3) <sup>b</sup>	5.9 (±0.1) <sup>b</sup>	5.3 (±0.2) <sup>b</sup>	5.5 (±0.1) <sup>b</sup>
p-value*	0.037	0.142	0.040	0.223
Age range (in years)				
≤20	5.1 (±0.4) <sup>b</sup>	5.9 (±0.3) <sup>b</sup>	4.6 (±0.7) <sup>a</sup>	5.1 (±0.2) <sup>b</sup>
21 to 30	5.2 (±0.8) <sup>b</sup>	5.9 (±0.3) <sup>b</sup>	5.0 (±0.9) <sup>b</sup>	5.2 (±0.7) <sup>b</sup>
31 to 40	5.5 (±0.7) <sup>b</sup>	5.8 (±0.5) <sup>b</sup>	5.2 (±0.8) <sup>b</sup>	5.5 (±0.5) <sup>b</sup>
41 to 50	5.3 (±0.7) <sup>b</sup>	5.8 (±0.6) <sup>b</sup>	5.3 (±0.8) <sup>b</sup>	5.5 (±0.6) <sup>b</sup>
≥51	5.7 (±1.1) <sup>b</sup>	6.0 (±0.8) <sup>b</sup>	5.0 (±0.8) <sup>b</sup>	5.4 (±0.7) <sup>b</sup>
p-value*	<0.001	0.069	<0.001	0.500
Children				
No	5.1 (±0.8) <sup>b</sup>	5.7 (±0.6) <sup>b</sup>	4.8 (±0.9) <sup>a</sup>	5.1 (±0.7) <sup>b</sup>
Yes	5.2 (±0.8) <sup>b</sup>	5.6 (±0.6) <sup>b</sup>	5.0 (±0.9) <sup>b</sup>	5.3 (±0.6) <sup>b</sup>
p-value**	0.034	0.020	0.019	0.014

SD: standard deviation. \*ANOVA. \*\*T test. <sup>a</sup>High level of work engagement; <sup>b</sup>Very high level of work engagement.

Source: Authors.

**Table 4.** Distribution of nursing professionals, by work-related quality of work. Barretos, São Paulo, Brazil, 2021.

WRQoL domains	WRQoL		
	Unsatisfactory n (%)	Intermediate n (%)	Satisfactory n (%)
Fair and adequate compensation	19 (5.6)	176 (51.9)	144 (42.5)
Work conditions	5 (1.5)	137 (40.3)	199 (58.4)
Use of capabilities	3 (0.9)	106 (31.1)	232 (68.0)
Opportunity	6 (1.8)	155 (45.5)	180 (52.8)
Social integration	4 (1.2)	102 (29.9)	235 (68.9)
Constitutionalism	8 (2.3)	111 (32.6)	222 (65.1)
Work and life	4 (1.2)	140 (41.1)	197 (57.8)
Social relevance	3 (0.9)	77 (22.6)	261 (76.5)

Source: Authors.

sonnel, because of the risk of contamination and uncertainties as to the treatment and cure for the

disease<sup>34</sup>. The authors believe that the pandemic's strong emotional impact intensified the loss of

**Table 5.** Relationship between engagement and work-related quality of life among nursing personnel. Barretos, São Paulo, Brazil, 2021.

WRQoL domains	Dimensions of work engagement			
	Vigour	Dedication	Absorption	Overall Score
	Average (SD)	Average (SD)	Average (SD)	Average (SD)
Fair and adequate compensation				
Unsatisfactory	4.4 (1.2) <sup>b</sup>	5.0 (1.1) <sup>c</sup>	4.4 (1.3) <sup>b</sup>	4.6 (1.1) <sup>b</sup>
Intermediate	5.0 (0.8) <sup>c</sup>	5.6 (0.6) <sup>c</sup>	4.8 (0.9) <sup>b</sup>	5.1 (0.6) <sup>c</sup>
Satisfactory	5.4 (0.5) <sup>c</sup>	5.8 (0.5) <sup>c</sup>	5.1 (0.7) <sup>c</sup>	5.4 (0.4) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	<0.001	<0.001
Correlation coefficient (r)	0.31 <sup>§</sup>	0.35 <sup>§</sup>	0.20 <sup>§</sup>	0.32 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001
Work conditions				
Unsatisfactory	5.3 (0.8) <sup>c</sup>	5.6 (0.5) <sup>c</sup>	5.1 (0.7) <sup>c</sup>	5.3 (0.6) <sup>c</sup>
Intermediate	4.8 (0.9) <sup>b</sup>	5.3 (0.8) <sup>c</sup>	4.6 (1.1) <sup>a</sup>	4.9 (0.8) <sup>b</sup>
Satisfactory	5.4 (0.5) <sup>c</sup>	5.8 (0.3) <sup>c</sup>	5.1 (0.7) <sup>c</sup>	5.4 (0.4) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	<0.001	<0.001
Correlation coefficient (r)	0.40 <sup>††</sup>	0.40 <sup>††</sup>	0.27 <sup>§</sup>	0.41 <sup>††</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001
Skill use				
Unsatisfactory	3.9 (2.2) <sup>a</sup>	4.3 (2.1) <sup>b</sup>	3.7 (0.2) <sup>a</sup>	4.0 (2.1) <sup>b</sup>
Intermediate	4.8 (0.9) <sup>b</sup>	5.4 (0.7) <sup>c</sup>	4.7 (1.0) <sup>b</sup>	4.9 (0.8) <sup>b</sup>
Satisfactory	5.3 (0.6) <sup>c</sup>	5.7 (0.5) <sup>c</sup>	5.0 (0.8) <sup>c</sup>	5.3 (0.5) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	0.010	<0.001
Correlation coefficient (r)	0.35 <sup>§</sup>	0.35 <sup>§</sup>	0.21 <sup>§</sup>	0.34 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001
Opportunity				
Unsatisfactory	4.2 (1.6) <sup>b</sup>	4.8 (1.5) <sup>b</sup>	4.4 (1.7) <sup>b</sup>	4.5 (1.6) <sup>b</sup>
Intermediate	5.0 (0.8) <sup>c</sup>	5.4 (0.7) <sup>c</sup>	4.6 (1.0) <sup>b</sup>	5.0 (0.7) <sup>c</sup>
Satisfactory	5.4 (0.7) <sup>c</sup>	5.8 (0.3) <sup>c</sup>	5.1 (0.7) <sup>c</sup>	5.4 (0.4) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	0.010	<0.001
Correlation coefficient (r)	0.36 <sup>§</sup>	0.36 <sup>§</sup>	0.26 <sup>§</sup>	0.37 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001
Social integration				
Unsatisfactory	5.1 (0.9) <sup>c</sup>	5.7 (0.6) <sup>c</sup>	5.3 (0.8) <sup>c</sup>	5.4 (0.7) <sup>c</sup>
Intermediate	4.9 (1.0) <sup>b</sup>	5.3 (0.9) <sup>c</sup>	4.6 (1.1) <sup>b</sup>	4.9 (0.9) <sup>b</sup>
Satisfactory	5.3 (0.6) <sup>c</sup>	5.7 (0.4) <sup>c</sup>	5.0 (0.8) <sup>c</sup>	5.3 (0.4) <sup>c</sup>
p-value (ANOVA)	0.008	<0.001	0.032	0.003
Correlation coefficient (r)	0.88 <sup>¥</sup>	0.29 <sup>§</sup>	0.19 <sup>§</sup>	0.28 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001

it continues

WRQoL among nursing professionals. Moreover, that strong emotional pressure can interfere with nursing staffs' coping strategies, and they begin to display prevention and denial behaviour in an attempt to avoid the problem. This behaviour impairs workers' performance<sup>35</sup>.

Although work engagement is considered a stable phenomenon, it is related to organisational and job characteristics<sup>8,12,36</sup>. Accordingly, the authors believe that levels of work engagement

among the study participants may have changed since the time of this study, because the health scenario resulting from the COVID-19 pandemic impacted the health service work process adversely<sup>37,38</sup>.

Participants in this study with satisfactory quality of life tended to display higher levels of work engagement. This suggests that it is important for the organisation to invest in programmes and measures to increase workers' satisfac-

**Table 5.** Relationship between engagement and work-related quality of life among nursing personnel. Barretos, São Paulo, Brazil, 2021.

WRQoL domains	Dimensions of work engagement			
	Vigour	Dedication	Absorption	Overall Score
	Average (SD)	Average (SD)	Average (SD)	Average (SD)
<b>Constitutionalism</b>				
Unsatisfactory	5.3 (0.7) <sup>c</sup>	5.7 (0.4) <sup>c</sup>	5.4 (0.7) <sup>c</sup>	5.4 (0.5) <sup>c</sup>
Intermediate	4.8 (1.0) <sup>b</sup>	5.3 (0.8) <sup>c</sup>	4.6 (1.1) <sup>b</sup>	4.9 (0.9) <sup>b</sup>
Satisfactory	5.3 (0.6) <sup>c</sup>	5.8 (0.4) <sup>c</sup>	5.0 (0.7) <sup>c</sup>	5.3 (0.4) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	<0.001	<0.001
Correlation coefficient (r)	0.35 <sup>§</sup>	0.35 <sup>§</sup>	0.21 <sup>§</sup>	0.33 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001
<b>Work and life</b>				
Unsatisfactory	5.3 (0.8) <sup>c</sup>	5.7 (0.6) <sup>c</sup>	5.4 (0.8) <sup>c</sup>	5.4 (0.7) <sup>c</sup>
Intermediate	4.9 (0.9) <sup>b</sup>	5.4 (0.8) <sup>c</sup>	4.7 (1.0) <sup>b</sup>	5.0 (0.8) <sup>c</sup>
Satisfactory	5.3 (0.6) <sup>c</sup>	5.8 (0.4) <sup>c</sup>	5.0 (0.7) <sup>c</sup>	5.4 (0.5) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	0.002	<0.001
Correlation coefficient (r)	0.31 <sup>§</sup>	0.28 <sup>§</sup>	0.18 <sup>§</sup>	0.29 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	0.001	<0.001
<b>Social relevance</b>				
Unsatisfactory	5.3 (1.0) <sup>c</sup>	5.5 (0.6) <sup>c</sup>	5.2 (0.9) <sup>c</sup>	5.4 (0.9) <sup>c</sup>
Intermediate	4.6 (1.0) <sup>b</sup>	5.2 (0.9) <sup>c</sup>	4.4 (1.1) <sup>b</sup>	4.7 (0.9) <sup>b</sup>
Satisfactory	5.3 (0.6) <sup>c</sup>	5.8 (0.4) <sup>c</sup>	5.0 (0.8) <sup>c</sup>	5.3 (0.5) <sup>c</sup>
p-value (ANOVA)	<0.001	<0.001	<0.001	<0.001
Correlation coefficient (r)	0.36 <sup>§</sup>	0.38 <sup>§</sup>	0.24 <sup>§</sup>	0.36 <sup>§</sup>
p-value (Pearson test)	<0.001	<0.001	<0.001	<0.001

<sup>a</sup> Low level of work commitment; <sup>b</sup> Average level of work engagement; <sup>c</sup> High level of work engagement; <sup>§</sup> Weak correlation;

<sup>¶</sup> Moderate correlation; <sup>†</sup> Strong correlation.

Source: Authors.

tion, and improve their interpersonal relations, well-being and physical and mental health<sup>39</sup>.

There are times, however, as in the case of the COVID-19 pandemic, when work is intensely demanding and can result in physical and emotional weaknesses. At such times, workers' engagement may increase, even though they perceive some aspects to be unsatisfactory and to prejudice work-related quality of life<sup>40</sup>. This may explain the presence of staff with unsatisfactory levels of social integration, constitutionalism and social relevance, who show higher levels of absorption (concentration and attention) and work engagement (enthusiasm, attention and euphoria).

The authors also believe that the impact of the COVID-19 pandemic can explain the high levels of absorption shown by workers with unsatisfactory levels of work and life space. During that period, the uncertainties due to lack of information about the risks of transmission and death

adversely influenced other spheres of health workers' lives, such as family relationships. The pandemic immersed nursing personnel in their work and made it difficult for them to detach themselves from the work environment<sup>40</sup>.

In the case of nursing personnel, job satisfaction is significantly related to their psychological empowerment. This empowerment manifests itself through four cognitive experiences: meaning, competence, self-determination and impact. Competence is similar to the WRQoL Immediate Opportunity to Use and Develop Human Capabilities domain<sup>41</sup>. This relationship was evidenced in our study, which showed lower levels of work engagement among professionals whose use of skills was at an unsatisfactory level, while professionals who reported a satisfactory level in their use of skills were more engaged in the work. This demonstrates that workers who feel secure in their activities and have opportunities to acquire knowledge in the organisation can pursue a path

of empowerment, be more satisfied at work and enjoy better perceived WRQoL.

The main limitation of this study was its cross-sectional design, which does not allow cause-and-effect relationships to be identified. The study also appears to be the first in the scientific literature to present a diagnosis of levels of work engagement and WRQoL among nursing staffs in the study period. Nonetheless, based on the evaluation of work engagement and WRQoL, the findings can inform discussions about the impact of overwork and physical and emotional burnout on the mental health of nursing workers in the pandemic context.

### **Conclusion**

The study showed that nursing staffs were strongly engaged in their work and satisfied with their work-related quality of life at the beginning of the COVID-19 pandemic.

Work engagement showed a positive correlation with WRQoL, underlining the importance of health institutions' developing strategies to acknowledge and enhance the value of nursing personnel, based on considerations that influence satisfaction and involvement at work.

It is also clear that the increasingly precarious state of resources available to most Brazilian health institutions – and evidenced by the COVID-19 pandemic – reinforces the need to develop strategies, such as recognition for and appreciation of their work, that increase WRQoL and work engagement among nursing personnel.

It is suggested that new studies be undertaken, using multivariate analysis and other approaches and including broader groups of personnel at different health institutions, in order to assess the impacts of the pandemic on levels of engagement and work-related quality of life among frontline nursing staff.

## Collaborations

TM Carvalho, LG Lourenção and MH Pinto contributed to the conception and development of the project, data acquisition, analysis and interpretation, writing and final approval of the article. RAPP Viana, AMBSG Moreira, LP Mello, GG Medeiros, AMF Gomes contributed to the writing and final approval of the article.

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