 doi:10.20944/preprints202202.0025.v2

Article

Correlation between Engagement and Quality of Life at Work in Nursing Professionals: Cross-Sectional Study in a Brazilian Hospital at the Beginning of the Covid-19 Pandemic

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Abstract: Objective: To investigate the correlation between engagement and quality of life at work in nursing professionals, from a public hospital in the interior of the state of São Paulo, Brazil, at the beginning of the Covid-19 pandemic. Methods: Cross-sectional, descriptive, and correlational study, with nursing professionals, conducted between December 2020 and January 2021. We used the Brazilian versions of the Utrecht Work Engagement Scale and the Walton Model scale. Results: The nursing professionals obtained a strong and positive correlation (r≥0.70) between the social integration domain of QWL and vigor dimension of work engagement (r=0.88; p=<0.001); moderate positive correlation (r≥0.40≤0.69) between QWL working conditions and vigor (r=0.40; p=<0.001), dedication (r=0.40; p=<0.001) and overall score (r=0.41; p=<0.001) of the work engagement. The correlations were positive and weak (r≤0.39) for the other domains of QWL and dimensions of work engagement. Conclusion: Professionals with satisfactory levels of quality of life tended to have higher levels of engagement at work. Professionals were strongly engaged and satisfied with their quality of life at work at the beginning of the Covid-19 pandemic.

Keywords: work engagement; job satisfaction; quality of life; occupational health; nursing practitioners; nursing

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1. Introduction

Nursing plays an important role in hospitals internationally. In Brazil, the category is composed of college level professionals (Nurses) and medium/technical level professionals (Nursing Assistants and Technicians) and represents more than two million professionals. There is, however, an unequal distribution of these professionals in the national territory, with a higher concentration in the state of São Paulo (25% of the total) [1,2].

Due to the often-precarious working conditions, nursing workers present high rates of absence due to psychological changes, such as anxiety, depression, and feelings of devaluation that compromise quality of life, well-being, engagement in work, personal and professional satisfaction, and harm work performance [3-7].

The Covid-19 pandemic raised more concern about the physical and mental health of these professionals, due to work overload. This was due to increased hospitalizations and extended working hours which generated physical and mental fatigue. Moreover, the concern with exposure to the virus, likelihood of contaminating family members, risk of safety equipment shortages and difficulties arising from increased rates of absenteeism further exacerbated the situation [8-12].

This scenario further increases the responsibility of nursing leaders to create strategies that contribute to increasing team engagement, ensuring sustainable performance, guaranteeing health, safety and work quality. These leaders have an opportune moment to make a difference in health institutions, through showing a positive impact of leadership competence and transforming realities [13].

The engagement of the team is congruent with the quality of the relationship between leaders and followers. The support offered by leadership goes beyond human resources policies, as the manager makes policies real and practical. One of the antecedents to the desire of not belonging to the work institution, is being unengaged which can increase employee turnover and generate additional costs, over and above training investments. Thus, retaining trained and qualified employees has an impact on achieving better results [14, 15].

Work engagement is defined as a positive and rewarding work-related mental state, which involves the worker's satisfaction with the profession and a sense of well-being. It is characterized by high levels of energy and resilience (vigor), strong identification with work, sense of significance, enthusiasm, inspiration, pride, and challenge (dedication), which generate positive emotions regarding work and good work performance of professionals, resulting in a sense of belonging, satisfaction, and fulfillment (absorption) [15-17].

A study on work engagement among hospital nurses in Saudi Arabia, conducted in 2016, showed that the professionals had a high level of dedication and moderate levels of absorption and vigor. The level of dedication was significantly higher among female professionals. The authors also found significant differences in the level of engagement of nursing professionals between different work environments evaluated [18]. In Brazil, a study with nurses from Primary Health Care services showed that the work engagement levels of professionals were high in all dimensions. However, nurses who worked as managers showed a very high level of engagement [19]. According to the literature, the quality of care provided by nursing staff increases with engagement, and nurse managers are instrumental in promoting staff engagement [20].

So, as individuals spend most of their lives in their work environments, the events in these places accompany workers beyond the organizations. This can influence their personal life (living with family, friends, and other social activities) or, in a reciprocal manner, personal problems can influence work performance. Therefore, leaders should: encourage the team's professionals to achieve their life projects, assist them to recognize their role and value to the company, encourage them to participate in change processes, provide them with opportunities for professional and individual development [21].

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The process of globalization and technological development makes individuals increasingly depend on the companies in which they work to achieve their life goals, and this depends on the opportunities within the organizations [22]. Therefore, studies on quality of life are gaining greater importance in organizations, motivated by the need to understand the factors that positively influence the lives of workers, in professional and personal relationships. Working conditions, work environment, and excessive workload are some of the factors that result in emotional exhaustion of the individual, which can negatively influence quality of life [23-25].

Quality of work life (QWL) is directly related to workers' job satisfaction, hygiene in the work environment, physical, mental health and well-being safety, interpersonal relationships, management and leadership style, application of ergonomics in the use of machines, tools, and concern for workers' health. QWL is related to choice of profession and organizational culture, which positively influences the commitment of professionals, and is reflected in organizational success [25-27].

A study with nursing professionals from public health institutions in Hermosillo (Mexico), pointed out that the quality of life at work of nursing professionals was moderate. However, professionals with permanent contracts, without other paid activities, had better QOL. The authors also concluded that the level of QLW depends on the work environment [28].

As work engagement can influence QWL [16], it is important to understand work engagement levels and QWL of nursing professionals, in the context of the pandemic of COVID-19. Thus, we believe that this study will contribute to better understand the behavior of these professionals at a time of great uncertainty and challenges. In addition to producing knowledge that will support the implementation of actions to improve the team's performance during the pandemic, positively impacting the commitment of professionals and the quality of care, reduce the turnover of professionals and resulting costs.

Therefore, this study aimed to investigate the correlation between engagement and quality of life at work in nursing professionals, from a public hospital in the interior of the state of São Paulo, Brazil, at the beginning of the Covid-19 pandemic.

2. Materials and Methods

2.1. Type of Study and Setting

A cross-sectional, descriptive, and correlational study was conducted between December 2020 and January 2021, with Nursing professionals from a medium-sized philanthropic general hospital (210 beds), located in the countryside of the state of São Paulo, Brazil. It is a reference hospital, which attends to high complexity procedures, women with high-risk pregnancy, neurosurgery, orthopedics, nephrology, cardiovascular surgery, and interventional cardiology procedures. There are 30 adult Intensive Care beds, 10 neonatal and pediatric intensive care beds.

2.2. Sample and Participants

The sample was estimated at 284 participants, considering the population of 606 Nursing professionals of the institution (145 nurses, 414 nursing technicians and 47 nursing assistants), confidence level of 95%, margin of error of 5%, reliability of 95% and an addition of 20% for losses. Professionals who were on vacation or away from work for any reason during the data collection period, those who did not answer the questionnaires completely, and professionals from an outsourced sector who occupied the physical structure of the institution, however had external managers, were excluded from the study.

All eligible professionals for the study were invited to answer the instruments, which was made available through the Research Electronic Data Capture (REDCap) platform, which respects the criteria established by the General Law of Data Protection. The final sample composed of 341 nursing professionals, including 93 nurses, 217 nurs-

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ing technicians, 27 nursing assistants, and four professionals who did not reflect their professional category.

2.3. Procedures, Measurements, Variables and Outcome

The following three self-applied instruments were used for data collection:

(a) an instrument elaborated by the authors, containing sociodemographic and characterization variables of the professionals, such as: gender, age, marital status, whether they have children or not, education, training period, means of transportation used and time to get to work, position and time of performance in the institution.

(b) the Brazilian version of the Utrecht Work Engagement Scale (UWES) was adapted and validated by Vazques et al. [29]. The UWES consists of 17 questions that evaluate the level of satisfaction of professionals with their work and considers three aspects of work engagement: vigor (six questions), refers to high levels of energy and resilience resilience, willingness to invest effort, not fatiguing easily, and persistence in the face of difficulty; dedication (five questions), refers to a feeling of enthusiasm and pride in one's work, which brings inspiration and meaning; and absorption (six questions) refers to being totally immersed in work, having difficulty detaching from it, time passes quickly and the worker forgets everything around him [29]. The UWES showed high internal consistency in the Brazilian population (Cronbach's alpha = 0.95; factor correlations = 0.81 to 0.82; Comparative Fit Index - CFI = 096; Tucker-Lewis TLI = 0.95) and showed good evidence of content and construct validity for use in our cultural context [29].

This scale uses a seven-point Likert scale, where 0 = never; 1 = almost never; 2 = sometimes; 3 = regularly; 4 = frequently; 5 = almost always; 6 = always. The calculation of the scores was performed using the arithmetic mean of the answers to the questions that composed each dimension, ranging from zero to six [30].

c) an adapted version of the Walton model (QWL) validated in Brazil by Timossi et al. The instrument consists of 32 statements distributed in eight domains: fair and adequate compensation (two statements), refers to the income appropriate to the position, which cannot present divergences when compared to the average salary in the labor market; working conditions (five statements), refers to working hours in accordance with the law, overtime pay when the employee exceeds his workload, safe conditions that minimize risks to physical and mental health; use of abilities (five statements), refers to the condition given to the employee for him to develop technical and behavioral skills through feedback, to know the processes that involve the work he performs, to be able to plan his activities and to have autonomy; opportunities (four statements), refers to the possibility of using the employee's full capacity to grow in the company, taking on new positions with security; social integration (four statements), refers to aspects that involve harmonious personal relationships, with fellowship among members of the organization due to the absence of prejudice, inequality, and favoritism; constitutionalism (four statements), involves the condition of the employee to enjoy his rights, have freedom of expression, equity, and privacy; work and life (three statements), refers to the way the work has impacted the employee's personal life, social and family life; the work must guarantee conditions for the employee to enjoy his free time for leisure with his family; and social relevance (five statements) is related to the employee's view of the company's social responsibility and its benefits to society [31]. The QWL scale showed high internal consistency in the validation study in the Brazilian population (Cronbach's alpha = 0.96), being considered adequate to support research in the area of quality of life at work in the Portuguese language [31]. The QWL questionnaire used a five-point Likert scale, where 1 = strongly disagree; 2 = disagree; 3 = neither disagree nor agree; 4 = agree; 5 = strongly agree. The higher the score, considering five as the maximum for the analyzed criterion, the more satisfied the professional [31].

The instruments were made available electronically, through the Research Electronic Data Capture (REDCap) platform, a free software for electronic data capture, which allows the creation of research instruments, provides features for collaboration, metadata

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workflow, security, auditing, and export to other statistical programs [32]. Two trained nurses voluntarily assisted the main researcher with data collection. In the explanation that preceded the application of the Consent Term, it was emphasized that the study was anonymous and did not present conflicts of interest with hospital administration. Subsequently, professionals were instructed to access the questions by means of a "QRCode" image. A link was sent via WhatsApp application to those who were unable to access the QRCode, without revealing participant identity. Data were collected between December 2020 and January 2021. Participants had access to the questionnaire after reading and signing the Informed Consent Form and thus agreed to participate in the study. The information required to answer the questionnaire was made available before each block of questions. The time frame to respond to the instruments was clarified.

2.4. Statistical Analysis

The data collected were tabulated and analyzed with the software IBM-SPSS, version 27.0 for Windows (SPSS, Inc., Chicago, IL, USA). Descriptive (relative and absolute frequencies, means, and standard deviations) and inferential (ANOVA and Correlation test) measures were applied, considering a significance level of 5% ($p<0.05$).

The mean scores for the dimensions of the UWES scale were calculated for work engagement: overall score (17 questions), vigor (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), according to the statistical model proposed in the Preliminary Manual UWES - Utrecht Work Engagement Scale [30]. The mean values were interpreted according to the manual's decoding ranges: 0 to 0.99 = Very Low; 1 to 1.99 = Low; 2 to 3.99 = Medium; 4 to 4.99 = High; 5 to 6 = Very High.

Quality of life at work was analyzed by calculating a mean score for the eight domains of the scale. The average scores obtained on a scale of one to five were converted into a scale of 0 to 100, allowing the classification of the quality-of-life level into: Unsatisfactory (scores between 0 and 24.99), Intermediate (scores between 25 and 75), and Satisfactory (scores between 75.1 and 100) [31].

The comparisons of the UWES dimensions mean scores, according to sociodemographic characteristics of nurses was performed by the t-test or analysis of variance (ANOVA), considering a level of significance of 5% ($p\leq0,05$).

Pearson's correlation test was used to analyze the correlation between engagement and quality of life at work, considering weak correlation for r values up to 0.39, moderate for values between 0.40 and 0.69, and strong for values equal to or greater than 0.70.

2.5. Ethical Considerations

Ethical approval for this study was obtained from the institutional ethics committee (decision: 4,349,861 – October 20, 2020; CAAE: 14262719.2.3001.5437). Informed consent was received from all participants before participating in the study. All procedures performed in this study were compatible with the ethical standards of the institutional research committee and with those of the Declaration of Helsinki and its comparable ethical standards.

3. Results

A total of 341 nursing professionals participated in the study: 93 (27.3%) nurses, 27 (7.9%) nursing assistants and 217 (63.6%) nursing technicians. The sociodemographic analysis showed that 89.4% of the participants were female, 73.3% were between 21 and 40 years, 49.3% were married or in a stable relationship, 60.4% had children; 29.0% had between one and less than four years of graduation, and 27.6% had graduated more than 10 years ago. Most professionals had worked at the institution for less than four years, and 34.9% had between one and less than four years of experience in the hospital (Table 1).

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Table 1. Sociodemographic and professional characteristics of study participants in a Brazilian hospital.

Variables	n	%
Professional Category		
Nursing Auxiliary	27	7.9
Nursing Technician	217	63.6
Nurse	93	27.3
No answer	4	1.2
Sex		
Female	305	89.4
Male	33	9.7
No answer	3	0.9
Age Group (years)		
≤ 20	6	1.8
21 a 30	123	36.1
31 a 40	127	37.2
41 a 50	60	17.6
≥ 51	15	4.4
No 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
No answer	3	0.9
Sons		
Yes	206	60.4
No	131	38.4
No answer	4	1.2
Time of Formation (in years)		
< 1	30	8.8
≥ 1 e < 4	99	29.0
≥ 4 e < 7	57	16.7
≥ 7 e < 10	57	16.7
> 10	94	27.6
No answer	4	1.2
Time of performance in the Institution (in years)		
< 1	63	18.5
≥ 1 e < 4	119	34.9
≥ 4 e < 7	60	17.6
≥ 7 e < 10	37	10.9
≥ 10	60	17.6
No answer	2	0.6

The results for work engagement of nursing professionals showed high mean scores for absorption (4.9) very high scores for vigor (5.2), dedication (5.6), and an overall score (5.2) (Table 2).

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Table 2. Evaluation of work engagement of nursing professionals in a Brazilian hospital.

UWES* Dimensions	†Min	‡Max	§Md	Mean	Standard Deviation	CI 95%¶	Interpretation
Vigor	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; ¶CI 95%: 95% confidence interval.

Analysis of the dimensions of work engagement in relation to the socio-demographic variables showed that there was no statistically significant difference (p-values > 0.05) between the scores of the dimensions of engagement for the variables sex, marital status, time of formation and time of performance in the hospital. Therefore, we have not included these data in Table 3.

As shown in Table 3, the analysis of the dimensions of work engagement in relation to the sociodemographic characteristics showed that the nursing assistants showed less dedication than the other professional categories (p=0.037); nursing assistants and technicians showed a lower level of vigor than nurses (p=0.040). Professionals 51 years or older had significantly higher scores in vigor (p<0.001) and dedication (p<0.001) than younger professionals. Professionals with children showed higher levels of dedication (p=0.034), vigor (p=0.019) and overall score (p=0.014) than those without children.

Table 3. Levels of engagement, according to sociodemographic characteristics of nurses in a Brazilian hospital.

Variables	Dedication Mean (±sd)	Absorption Mean (±sd)	Vigor Mean (±sd)	Overall score Mean (±sd)
Professional Category/Function				
Nursing Auxiliary	4.9 (±1.0) [a]	5.4 (±0.7) [b]	4.9 (±0.8) [a]	5.0 (±0.7) [b]
Nursing Technician	5.1 (±0.8) [b]	5.6 (±0.6) [b]	4.8 (±1.0) [a]	5.2 (±0.7) [b]
Nurse Assistant	5.3 (±0.7) [b]	5.7 (±0.5) [b]	5.0 (±0.7) [b]	5.3 (±0.5) [b]
Nurse Coordinator	5.5 (±0.3) [b]	5.9 (±0.1) [b]	5.3 (±0.2) [b]	5.5 (±0.1) [b]
*p-value**	*0.037*	0.142	*0.040*	0.223
Age Group (years)				
≤ 20	5.1 (±0.4) [b]	5.9 (±0.3) [b]	4.6 (±0.7) [a]	5.1 (±0.2) [b]
21 a 30	5.2 (±0.8) [b]	5.9 (±0.3) [b]	5.0 (±0.9) [b]	5.2 (±0.7) [b]
31 a 40	5.5 (±0.7) [b]	5.8 (±0.5) [b]	5.2 (±0.8) [b]	5.5 (±0.5) [b]
41 a 50	5.3 (±0.7) [b]	5.8 (±0.6) [b]	5.3 (±0.8) [b]	5.5 (±0.6) [b]
≥ 51	5.7 (±1.1) [b]	6.0 (±0.8) [b]	5.0 (±0.8) [b]	5.4 (±0.7) [b]
*p-value**	*<0.001*	0.069	*<0.001*	0.500
Sons				
No	5.1 (±0.8) [b]	5.7 (±0.6) [b]	4.8 (±0.9) [a]	5.1 (±0.7) [b]
Yes	5.2 (±0.8) [b]	5.6 (±0.6) [b]	5.0 (±0.9) [b]	5.3 (±0.6) [b]
*p-value***	*0.034*	*0.020*	*0.019*	*0.014*

sd: standard deviation. * ANOVA. ** t-test. [a] High engagement level. [b] Very high engagement level.

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Most professionals obtained intermediate levels of QWL in the domain, fair and appropriate compensation (51.9%), satisfactory levels in the other domains and the highest score (76.5%) for social relevance domain, when assessing quality of work life (Table 4).

Table 4. Distribution of nursing professionals, according to the level of quality of life at work in a Brazilian hospital.

QWL Domains	QWL Level		
	Unsatisfactory	Intermediate	Satisfactory
	n (%)	n (%)	n (%)
Fair and adequate compensation	19 (5.6)	176 (51.9)	144 (42.5)
Working conditions	5 (1.5)	137 (40.3)	199 (58.4)
Use of skills	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)

The analysis of the correlation between quality of life and work engagement (Pearson's correlation test), presented in Table 4, showed a strong and positive correlation ($r \geq 0.70$) between the social integration domain of QWL and vigor dimension of work engagement (r=0.88; p=<0.001); moderate positive correlation ($r \geq 0.40 \leq 0.69$) between QWL working conditions and vigor (r=0.40; p=<0.001), dedication (r=0.40; p=<0.001) and overall score (r=0.41; p=<0.001) for dimensions of work engagement. The correlations were positive and weak ($r \leq 0.39$) for the other domains of QWL and dimensions of work engagement (Table 5).

We also observed a tendency for professionals with satisfactory levels of quality of life to have higher levels of work engagement. It is noteworthy, however, that professionals with unsatisfactory levels of social integration, constitutionalism, and social relevance had higher levels of engagement (overall score) and absorption. Professionals with unsatisfactory levels of work and life showed higher levels of absorption (Table 5).

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Table 5. Analysis of the relationship between engagement and quality of life at work in nursing professionals in a Brazilian hospital.

QWL Domains	Dimensions of Work Engagement			
	Vigor	Dedication	Absorption	General Score
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Fair and adequate compensation				
Unsatisfactory	4.4 (1.2) [b]	5.0 (1.1) [c]	4.4 (1.3) [b]	4.6 (1.1) [b]
Intermediate	5.0 (0.8) [c]	5.6 (0.6) [c]	4.8 (0.9) [b]	5.1 (0.6) [c]
Satisfactory	5.4 (0.5) [c]	5.8 (0.5) [c]	5.1 (0.7) [c]	5.4 (0.4) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Correlation Coefficient (r)	*0.31* [§]	*0.35* [§]	*0.20* [§]	*0.32* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Working conditions				
Unsatisfactory	5.3 (0.8) [c]	5.6 (0.5) [c]	5.1 (0.7) [c]	5.3 (0.6) [c]
Intermediate	4.8 (0.9) [b]	5.3 (0.8) [c]	4.6 (1.1) [a]	4.9 (0.8) [b]
Satisfactory	5.4 (0.5) [c]	5.8 (0.3) [c]	5.1 (0.7) [c]	5.4 (0.4) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Correlation Coefficient (r)	*0.40* [††]	*0.40* [††]	*0.27* [§]	*0.41* [††]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Use of skills				
Unsatisfactory	3.9 (2.2) [a]	4.3 (2.1) [b]	3.7 (0.2) [a]	4.0 (2.1) [b]
Intermediate	4.8 (0.9) [b]	5.4 (0.7) [c]	4.7 (1.0) [b]	4.9 (0.8) [b]
Satisfactory	5.3 (0.6) [c]	5.7 (0.5) [c]	5.0 (0.8) [c]	5.3 (0.5) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*0.010*	*<0.001*
Correlation Coefficient (r)	*0.35* [§]	*0.35* [§]	*0.21* [§]	*0.34* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Opportunity				
Unsatisfactory	4.2 (1.6) [b]	4.8 (1.5) [b]	4.4 (1.7) [b]	4.5 (1.6) [b]
Intermediate	5.0 (0.8) [c]	5.4 (0.7) [c]	4.6 (1.0) [b]	5.0 (0.7) [c]
Satisfactory	5.4 (0.7) [c]	5.8 (0.3) [c]	5.1 (0.7) [c]	5.4 (0.4) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*0.010*	*<0.001*
Correlation Coefficient (r)	*0.36* [§]	*0.36* [§]	*0.26* [§]	*0.37* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Social Integration				
Unsatisfactory	5.1 (0.9) [c]	5.7 (0.6) [c]	**5.3 (0.8)** [c]	**5.4 (0.7)** [c]
Intermediate	4.9 (1.0) [b]	5.3 (0.9) [c]	4.6 (1.1) [b]	4.9 (0.9) [b]
Satisfactory	5.3 (0.6) [c]	5.7 (0.4) [c]	5.0 (0.8) [c]	5.3 (0.4) [c]
p-value (ANOVA)	*0.008*	*<0.001*	*0.032*	*0.003*
Correlation Coefficient (r)	*0.88* [¥]	*0.29* [§]	*0.19* [§]	*0.28* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Constitutionalism				
Unsatisfactory	5.3 (0.7) [c]	5.7 (0.4) [c]	**5.4 (0.7)** [c]	**5.4 (0.5)** [c]
Intermediate	4.8 (1.0) [b]	5.3 (0.8) [c]	4.6 (1.1) [b]	4.9 (0.9) [b]
Satisfactory	5.3 (0.6) [c]	5.8 (0.4) [c]	5.0 (0.7) [c]	5.3 (0.4) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Correlation Coefficient (r)	*0.35* [§]	*0.35* [§]	*0.21* [§]	*0.33* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Work and Life				
Unsatisfactory	5.3 (0.8) [c]	5.7 (0.6) [c]	**5.4 (0.8)** [c]	5.4 (0.7) [c]
Intermediate	4.9 (0.9) [b]	5.4 (0.8) [c]	4.7 (1.0) [b]	5.0 (0.8) [c]
Satisfactory	5.3 (0.6) [c]	5.8 (0.4) [c]	5.0 (0.7) [c]	5.4 (0.5) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*0.002*	*<0.001*
Correlation Coefficient (r)	*0.31* [§]	*0.28* [§]	*0.18* [§]	*0.29* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*0.001*	*<0.001*
Social relevance				
Unsatisfactory	5.3 (1.0) [c]	5.5 (0.6) [c]	**5.2 (0.9)** [c]	**5.4 (0.9)** [c]
Intermediate	4.6 (1.0) [b]	5.2 (0.9) [c]	4.4 (1.1) [b]	4.7 (0.9) [b]

 doi:10.20944/preprints202202.0025.v2

Satisfactory	5.3 (0.6) [c]	5.8 (0.4) [c]	5.0 (0.8) [c]	5.3 (0.5) [c]
p-value (ANOVA)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Correlation Coefficient (r)	*0.36* [§]	*0.38* [§]	*0.24* [§]	*0.36* [§]
p-value (Pearson test)	*<0.001*	*<0.001*	*<0.001*	*<0.001*

[a] Low level of engagement. [b] Medium level of engagement. [c] High level of engagement. § Weak correlation. ††Moderate correlation. ¥Strong correlation.

4. Discussion

The nursing professionals obtained a strong and positive correlation between the social integration domain of QWL and vigor dimension of work engagement; moderate positive correlation between QWL working conditions and vigor, dedication and overall score of the work engagement. The correlations were positive and weak for the other domains of QWL and dimensions of work engagement. We also observed a tendency for professionals with satisfactory levels of quality of life to have higher levels of work engagement.

The main limitation of this study is related to the cross-sectional design, which does not allow establishing cause and effect relationships. However, its results make a great contribution by presenting a diagnosis of the relationship between engagement and QWL in nursing professionals at the beginning of the Covid-19 pandemic. Thus, the knowledge produced will support future analyses and discussions about the impact of the overload and physical and emotional stress caused by the Covid-19 pandemic on the levels of engagement and QWL of these professionals.

The sociodemographic profile of nursing professionals in this study corroborates other studies and is consistent with the profile of Brazilian nursing professionals, which highlights the predominance of nursing technicians and female prevalence in the profession [2,4-6,33,34], despite the trend of increasing male professionals in this professional category [35].

The evaluation of the levels of engagement of nursing professionals showed that they have an important sense of concentration and pleasure, which connects these nursing professionals to work, as well as very high levels of energy and mental resilience, involvement, and enthusiasm with work. These results are consistent with other studies on work engagement with Brazilian nursing professionals [19,33] from other countries [18,36-38], and evidence that professionals were highly engaged and aligned with the work environment and activity at the beginning of the COVID-19 pandemic. Maintaining engagement requires articulation between personal and professional capacities, and the autonomy of the professional in the workplace [38]. The higher scores obtained by nurse coordinators corroborate the literature, which reports the presence of higher levels of engagement among nurse managers [19].

It was observed that most professionals presented satisfactory levels of QWT, especially in relation to workers' perception of the hospital's social responsibility, quality of services provided, and workers' care. These results show that the company's investment in adequate conditions for employee well-being that favor development and organizational justice contribute to increased quality of life and worker engagement [38,39].

Moreover, we observed that the professionals evaluated presented intermediate levels of QWL and related it to the adequacy of remuneration to work and equity criteria. This is a sensitive situation for all Brazilian nursing professionals, who are negatively impacted by wage inequalities and poor remuneration [40,41], leading them to retain more than one job. Associated with long working hours, the impairment of QWL related to the perception of fair and adequate compensation can exacerbate physical and emotional exhaustion, impairing the professional's performance [42-44].

According to the literature, poor and unequal remuneration is associated with low perceptions of personal quality of life, which can discourage the professional [45,46]. In relation to QWL, remuneration is not considered a factor of satisfaction, but understood as a condition that helps to avoid dissatisfaction, when perceived as fair and adequate [7.

 doi:10.20944/preprints202202.0025.v2

In this context, we understand that adequate and fair remuneration can contribute to avoid compromising QWL.

The long working hours resulting from dual jobs lead to the physical exhaustion of professionals, who may develop musculoskeletal symptoms that negatively impact QWL [45]. In addition, physical exhaustion related to the lack of fair and adequate compensation leads to worsening emotional exhaustion of workers. This combination of physical and emotional overload can result in a lack of personal and professional achievement, and impair job performance [42-44].

A study of teachers conducted in Greece showed that professionals perceived significantly increased levels of emotional exhaustion and depersonalization, two components of Burnout, during the country's economic crisis, which generated decreases in salary and insecurity in keeping the employee [48]. Similarly, a study with nursing professionals from public health institutions in a Mexican city indicated that the greatest dissatisfaction of professionals was related to wages and contractual rights. The authors emphasize that it is necessary to adequately reward nursing professionals for the work performed, to ensure good QWL for these professionals [28].

We emphasize that the pandemic of COVID-19 increased the emotional distress of nursing professionals due to the risk of contamination and the uncertainties about the treatment and cure of the disease [49]. We believe that the high emotional impact caused by the pandemic may increase QWL impairment among nursing workers. Moreover, this high emotional pressure can interfere with the coping strategies adopted by professionals, who begin to present attitudes of avoidance and denial, in an attempt to avoid the problem. This behavior impairs the worker's work performance [50].

About work engagement, we emphasize that although it is considered a stable phenomenon, it is related to organizational and work characteristics [51,52]. Therefore, we believe that engagement levels of the professionals evaluated may have changed since the time of this evaluation, as the health scenario generated by the COVID-19 pandemic has negatively impacted the work process in health services [53-55].

The tendency that professionals with satisfactory levels of quality of life showed higher levels of engagement at work shows the importance of the company investing in programs and actions that increase worker satisfaction, improve interpersonal relationships, well-being, and physical and mental health of workers. Effective actions of valorization and attention to the workers' health positively impacts the desire to remain in the company and decrease the costs associated with turnover and absenteeism [56].

However, periods of intense labor demands can cause physical and emotional fragility, as experienced during the COVID-19 pandemic. During these times, an increase in worker engagement may increase, although there may be unsatisfactory perception of some aspects that compromise work life quality [57]. This may explain the presence of professionals with unsatisfactory levels of social integration, constitutionalism, and social relevance with higher levels of absorption (concentration and attention) and engagement (enthusiasm, attention, and euphoria).

Similarly, we believe that the high level of absorption displayed by workers with unsatisfactory levels of work and life is due to the impact of the COVID-19 pandemic. During this period, the uncertainties related to lack of information about the risks of transmission and death, negatively influenced other spheres of health workers' lives, like their relationships with their families. COVID-19 pandemic resulted in professionals immersing themselves in work and they experienced difficulties to disengaging from the work environment [57,58].

Engagement is a mediating variable in the relationship between organizational justice and organizational citizenship behaviors, that is, when employees are treated fairly, equitably, with dignity and respect, they may feel more engaged in their jobs [59].

Job satisfaction derives from the fulfillment of tasks in the work environment, feeling happy about the working condition, and the value placed by the employee at work. It is related to several organizational factors, such as creating a good work environment, offering resources needed to develop the tasks, having a supportive leadership, and en-

 doi:10.20944/preprints202202.0025.v2

suring the psychological empowerment of nursing professionals [60,61]. Job satisfaction is significantly related to the psychological empowerment of nursing professionals. This empowerment is manifested through four cognitive experiences: meaning, competence, self-determination, and impact. Competence has similarity with the domain use of abilities, of QWL [62]. This relationship was evidenced in our study, which indicated lower levels of engagement among professionals with unsatisfactory level of skill use, while professionals who presented satisfactory level of skill use had higher engagement at work. In other words, the employee who feels safe in his activities and has opportunities to acquire knowledge in the company, can follow the path to empowerment, be more satisfied at work and have a better perception of QWL.

5. Conclusions

The study showed that nursing professionals were strongly engaged and satisfied with their quality of life at work at the beginning of the Covid-19 pandemic.

Work engagement showed a positive correlation with QWL, reinforcing the importance of health institutions to create strategies for valuing nursing professionals, based on aspects that influence job satisfaction and engagement.

Moreover, it is evident that the precariousness of resources experienced by most Brazilian health institutions and evidenced by the COVID-19 pandemic, reinforces the need to devise strategies that raise QWL and work engagement of nursing professionals, such as work recognition and appreciation.

We suggest that new studies be developed after the pandemic, to evaluate its impact on the levels of engagement and quality of work life of nursing professionals who worked on the front line.

Author Contributions: Conceptualization, T.M.d.C. and M.H,P.; methodology, T.M.d.C., L.G.L. and M.H.P.; software, T.M.d.C. and L.G.L.; validation, T.M.d.C., L.G.L., M.H.P., R.A.P.P.V., A.M.B.d.S.G.M., L.P.d.M., C.G.C.M., L.M.B., C.P.A., A.M.R.R.d.O., M.A.d.S.A., E.F.C., L.d.S.L., K.J.G., F.R.G.X.N., N.S.G.M.d.S.S., M.L.S.G.S., J.F.d.O., C.L.F.C., F.A.B., and J.L.d.C.; formal analysis, T.M.d.C., L.G.L. and M.H.P.; investigation, T.M.d.C. and M.H.P.; resources, T.M.d.C., L.G.L. and M.H.P.; data curation, T.M.d.C., L.G.L. and M.H.P.; writing - original draft preparation, T.M.d.C. and L.G.L.; writing—review and editing, M.H.P., R.A.P.P.V., A.M.B.d.S.G.M., L.P.d.M., C.G.C.M., L.M.B., C.P.A., A.M.R.R.d.O., M.A.d.S.A., E.F.C., Ld..S.L., K.J.G., F.R.G.X.N., N.S.G.M.d.S.S., M.L.S.G.S., J.F.d.O., C.L.F.C., F.A.B., and J.L.d.C.; visualization, T.M.d.C., L.G.L., M.H.P., R.A.P.P.V., A.M.Bd..S.G.M., L.P.d.M., C.G.C.M., L.M.B., C.P.A., A.M.R.R.d.O., M.A.d.S.A., E.F.C., L.d.S.L., K.J.G., F.R.G.X.N., N.S.G.M.d.S.S., M.L.S.G.S., J.F.d.O., C.L.F.C., F.A.B., and J.L.d.C.; supervision, L.G.L. and M.H.P.; project administration, T.M.d.C. and M.H,P. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and the study was approved by the Research Ethics Committee at School of Medicine of São José do Rio Preto (decision: 4,349,861; CAAE: 14262719.2.3001.5437) on October 20, 2020.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The datasets generated during the current study are not publicly available but are available from the corresponding author on reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

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