Leadership styles & Frontline workers engagement in healthcare systems: A case of Australian Healthcare

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Abstract
The paper explores the depth of association between diverse types of leadership and engagement and job satisfaction of frontline healthcare workers in the public healthcare system across Sydney, especially in the wake of the COVID-19 pandemic. The study aims to consider the crucial role of frontline personnel in relation to their public health setting, and gender-related responses to emergencies, especially in the context of the Australian healthcare system. The Study aimed at determining the existence of significant relationships within the leadership styles (transformational, transactional, laissez-faire, and democratic), perceived organizational support, the frontline healthcare staff engaged to work, and their job satisfaction. Also, the research was intended to provide a comparative analysis of the responses of male healthcare workers and female healthcare workers. A quantitative, cross-sectional survey approach was utilized, where the primary data were collected with the assistance of a structured questionnaire on Likert scales with 285 frontline healthcare workers in Sydney. Smart PLS-4 was used to conduct the analysis of the data obtained. The findings reveal that the perceived organizational support is the best positive predictor of the frontline healthcare worker engagement, exponentially accounting for 55.4 percent of its variance. In case of job satisfaction, with 72.6 percent of the total variance explained, laissez-faire and transformational leadership produced significant positive outcomes. Nonetheless, there is an indication of a possible discriminant validity problem based on the high values in the Heterotrait-Monotrait Ratio (HTMT) that indicates a possible problem with the relationship between transactional leadership and job satisfaction; hence, these relationships should be interpreted with care. The results also point to the great significance of a healthy organizational setting in encouraging engagement within the healthcare environment.

Key words: Leadership styles, Frontline workers engagement, healthcare, Job Satisfaction

1. Introduction

A good public health system relies on the health sector and frontline workers. They invest their effort, strength, and participation in their workplace activities, especially during times of crisis, such as the recent COVID-19 pandemic (World Health Organization, 2021). The achievement of clinical delivery, patient outcomes, and the performance of the entire organization are endogenously correlated with the leadership of these workers and their job satisfaction (Johnson et al., 2020).

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The research studies the relationship between leadership and the engagement of frontline workers in the healthcare delivery among the people of Sydney is all about. The modern healthcare sector worldwide is subject to constant modifications, driven by the emergence of new needs, technological advancements, and the need to ensure both effectiveness and adaptability in service delivery. The nature of roles as a leader at this very dynamic environment is more than administrational; it involves the task of inspiring, motivating and partaking in the empowerment of staff to give their best to perform to lead organizational goals, and uphold the highest standards of care to patients (Purdy et al., 2020).

Depending on the types of leadership (e.g, transformational, transactional, laissez-faire, and democratic leaders), different impacts on the attitudes and behaviours of the employees, and, ultimately, on their level of engagement may be observed (Al-Hamdan et al., 2021). One example of the transformational leaders is that they are commonly described as those who can inspire and empower the individuals he is leading, and they are, to them, taking away the sensation of purpose and commitment (Bass & Riggio, 2016). Transactional leaders, in their turn, are typical of systemic interaction and incentive motivation, whereas, with laissez-faire leadership, there is not much guidance, and the attempt of detachment might occur (Nguyen & Tu, 2019).

Democratic leaders, in their turn, promote cooperation and mutual decision-making that can raise the level of ownership and engagement (Lee et al., 2023). The maximization of healthcare delivery would entail learning about the leadership styles that would best suit them about the involvement of the frontline workers in the field of healthcare. The direct contact with patients, e.g. nurses, paramedics, doctors, and line support workers of the healthcare sphere have been them directly exposed to the difficulties and forced to accept most functional emotional pressure of the operations. They do not just become engaged because they are satisfied with their jobs but also because they are emotionally committed to the organization, willingness to exceed expectations and their values align with organization's (Schaufeli et al., 2018).

An increased frontline employee engagement is linked to better patient safety, fewer medical errors, greater patient satisfaction, and staff turnover rates (Johnson et al., 2020). On the other hand, burnout, reduced productivity, and low quality of care may result because of disengagement (Shanafelt et al., 2020). Frontline worker engagement is a specifically relevant field of research due to the unique pressures of the healthcare environment, in which the work is long, emotionally draining, and requires exposure to difficult or harmful cases.

The COVID-19 pandemic was an unprecedented challenge to the work of all healthcare systems, positioning frontline workers to the edge. Sydney (Sharma & Gupta, 2021). Physicians who were on the frontline experienced excessive pressure, such as overload on patients, concern of contracting the infection, insufficient resources, and psychological burden (Dyrbye et al., 2021). Their management and subsequent persistence in delivering crucial services were mainly dependent on the leadership they were offered as well as their respective levels of participation (Al-Omari et al., 2020). The pandemic revealed how important it is to study these workers and how necessary it is to understand and support them, so the issue of leadership and engagement becomes even more topical nowadays.

1.1 Objective

The primary objectives of this study are twofold:

- To ascertain the significant relationship between various leadership styles (Independent Variables) and frontline healthcare worker engagement and job satisfaction (Dependent Variables) in the public healthcare system of Sydney.

- To conduct a comparative analysis of the responses of male and female healthcare workers regarding leadership styles, engagement, and job satisfaction, specifically considering their experiences during the COVID-19 pandemic.

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2. Literature Review

The literature review comprised recent research (published within the past 6 years) on leadership styles, frontline worker engagement, and their interconnection in healthcare systems, with a particular focus on the impact of crises such as the COVID-19 pandemic and gender differences.

2.1 Leadership Styles in Healthcare

According to recent literature, the importance of leadership in organizational culture and its impact on employee outcomes in the healthcare sector is also noted as one of the key factors (Purdy et al., 2020). Transformational leadership has remained praised due to its positive effects. As an example, the same authors conducted a study of nurses in Jordan in 2021, whereby transformational leadership meaningfully forecasted both increases in job satisfaction and decreases in turnover intentions, two of the most significant engagement indicators. And, on the same analogy, in their survey of medical leadership in a time of crisis, Purdy et al. (2020) also noted that transformational leaders, their ability to make people feel inspired through their transformational visions, and their particular individualistic approaches, proved more effective in encouraging medical workers in the early days of the COVID-19 pandemic. Another study conducted by Kim and Park (2022) in South Korea confirmed the conclusion that transformational leadership led to a higher work engagement status of nurses, proving centralized on a higher psychological empowerment degree. Transactional leadership, on the other hand, has been effective when it comes to the day-to-day work and specific goals but otherwise, it has been revealed that transactional leadership has been mixed in terms of engagement. According to a research distributed in 2019 by Nguyen and Tu (Vietnam), transactional leadership already established some expectations, but it could not develop the same responses of emotional devotion as transformational leadership did among medical employees. It implies that it has a drawback as regards creating intrinsic motivation.

Laissez-faire and is mostly related to negative consequences. According to a study by Smith and Jones (2022) the concept of laissez-faire leadership was explicitly associated with increased stress and disengagement levels among healthcare professionals in the UK as healthcare workers were not able to feel supported and provided with direction during the pandemic. The style has come in many cases to cause role ambiguity and loss of direction, which are not healthy high-stakes environments like healthcare.

The concept of democratic leadership that focuses on shared decisions has been picked up, especially on an ownership and empowerment sense (Lee et al., 2023). An example of a 2023 study by Lee et al. was conducted on teams working at hospitals in South Korea and showed that democratic leadership had a positive impact on the unity of a team and active involvement of frontline staff in solving problems. Such participative style have been able to improve sense of worth and input amongst medical staffs.

2.2 Frontline Worker Engagement in Healthcare

The involvement of frontline workers in healthcare is a complex measure, which includes vigor, dedication, and absorption (Schaufeli et al., 2018). The latest studies emphasize its role regarding patient safety, quality of care, and an organizational resilience (Johnson et al., 2020). A methodological exam of the literature by Johnson et al. (2020) demonstrated the direct connection between high degrees of nurse engagement and advanced patient results, such as decreased passing away and improved hospital stay. Frontline worker engagement under the influence of the COVID-19 pandemic is a very common topic. Research conducted by Shanafelt et al., (2020) in the US and Dyrbye et al., (2021) across the world, indicated terrifying levels of burnout, stress and emotional exhaustion among medical workers during the pandemic, and this directly affected the level of engage. Some of the reasons that led to disengagement in this duration were lack of personal protective equipment (PPE), fear of contracting, long hours of work and moral injury (Dyrbye et al., 2021; Shanafelt et al., 2020). On the other hand, the promoters of interest were good leadership support, team cohesion, and purpose

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(Peterson & Miller, 2022). A research by Peterson and Miller (2022) dedicated to primary healthcare workers at the time of the pandemic so paying particular attention to the importance of effective communication, compassionate leadership, and accessibility of resources aimed at addressing employee mental well-being as the key factors of engagement sustainability.

2.3 Interplay between Leadership and Engagement in Healthcare

The literature consistently demonstrates a strong link between leadership styles and frontline worker engagement in healthcare. Transformational leadership is particularly effective in fostering engagement. Considering the example of South Korea, Kim and Park (2022) were able to posit that transformational leadership was a significant predictor of elevated work engagement among nurses through growth in psychological empowerment.

According to the other research by Davies and Williams (2019), conducted about the Australian hospital staff, the leadership displaying inspiring motivation and personal attention to employee consideration trained the workforce to be more engaged. It is not one-sided since motivated employees tend to think positively about their leadership and listen to their advice. Effective leadership is even more important during crisis to alleviate some of the downsides that would occur on engagement.

Al-Omari et al. (2020) also pointed out that at the initial period of COVID-19, leaders who were empathetic, evidently gave directions, and considered the well-being of the staff were capable of keeping more engaged their troops in the hospitals in the Middle East. On the contrary, the absence of a supporting leadership contributed to the feeling of disengagement and burnout, which was proven by a study conducted in India by Sharma and Gupta (2021). This further argues the fact that effective leadership is a barrier to psychological costs of the stressful work situations.

2.4 Gender Differences in Responses to Leadership and Engagement during COVID-19

COVID-19 disclosed that there might be a gender disparity in the experience and reaction of the healthcare workforce. Although the studies on this particular subject are still young, the results seem to indicate subtle distinctions. As an example, a document summary by the World Health Organization (WHO, 2021) noted that females, who make up the majority of the medical workforce worldwide, were among the most affected by the pandemic because they are the main caretakers at home on top of their work functions. That might affect their involvement levels and their leaders being supportive or not. Certain analyses reported that even female health professionals felt more psychological discomfort during the pandemic than their male colleagues, which could also affect their involvement (Chen and Wang, 2022) levels and their perception of leadership support.

Others indicated that female field workers in healthcare showed greater psychological distresses during the pandemic than their male counterparts, which might have affected their participation and job delight (Chen and Wang, 2022, China). This might be due to the mix of work and the workplace and the augmented responsibility at home. On the other hand, other studies (e.g., European Institute for Gender Equality, 2020) pointed out that women leaders in healthcare tend to have more empathetic and collaborative leadership skills during the crisis, which can have a positive effect on the engagement at the team level. Nonetheless, additional, more detailed research is essential to learn how male and female healthcare professionals in the environment reacted to various leadership patterns and underwent an engagement process of the pandemic, focusing on the cultural and social peculiarities of their work. The research would give such context-specific knowledge.

2.5 Research Gap and Contextual Relevance

Although there are very many studies on the issues of leadership and engagement in healthcare in other countries around the world, there has been a growing gap; recent research studies, which are context-related studies regarding the involvement of the general healthcare system of Sydney and specifically regarding the consequences of the COVID-19 pandemic and gendered research comparisons. Past

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research in the area might not accurately represent the specifics of the prevailing healthcare situation, the expected pandemic aftermath, and the unique mechanisms of the public sector. The paper under study intends to address this gap by offering empirical data in a critical country of development that would prove more valuable towards a better knowledge of the essential variables in question.

3. Methods

The paper adopts a quantitative research design whereby primary data have been collected to be able to determine the correlation between leadership style and engagement and job satisfaction levels of frontline healthcare workers employed in Sydney under the public health department in the Sydney hospital system.

3.1 Research Design

A cross-sectional survey research design has been adopted to sample the data of frontline healthcare workers at the one-way point. The design is appropriate in the determination of relationships and variance among variables of a specific population (Creswell & Creswell, 2018).

3.2 Population and Sampling

This research study targets the frontline healthcare workers (e.g., doctors, nurses, paramedics, technicians) who are working in Sydney in the public healthcare system. Because of the vastness of this population, a non-probability method of sampling has been used; that is, the convenience sampling method. The approach is viable when it comes to tapping into an easily accessible group of respondents in the mentioned healthcare industry (Etikan et al., 2016). Data on 285 respondents have been targeted. The given sample size is sufficient to run the proposed statistical tests (correlation, regression, and ANOVA) and to give valuable information considering the available resources and the finances allocated on time (Hair et al., 2019). Attempts have been made to achieve a representation of varied kinds of public healthcare facilities (e.g., district hospitals, basic health units) at the state level of Punjab, to increase the generalizability of the results in the selected sample.

3.3 Variables and Operational Definitions

Dependent Variables:

- **Frontline Healthcare Worker Engagement:** This has been operationalized as the psychological presence and sense of connection an individual has to his/her work. It has been articulated on a multi-dimensional scale where it has the involvement of Vigor, dedication, and absorption in their work (Schaufeli et al., 2018).

- **Job Satisfaction:** This has been operationalized as how satisfied and happy healthcare workers are with their jobs. It includes such things as contentment with employment per se, compensation, advancement, supervision, as well as colleagues (Smith et al., f).

Independent Variables:

- **Transformational Leadership:** Operationalized as one type of leadership based upon idealized influence (charisma), inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Riggio, 2016).

- **Transactional Leadership:** Literally operationalized as an exchange based leadership style where elements of contingent reward together with management of exception (active and passive) existed between the leaders and the followers (Bass & Avolio, 2017).
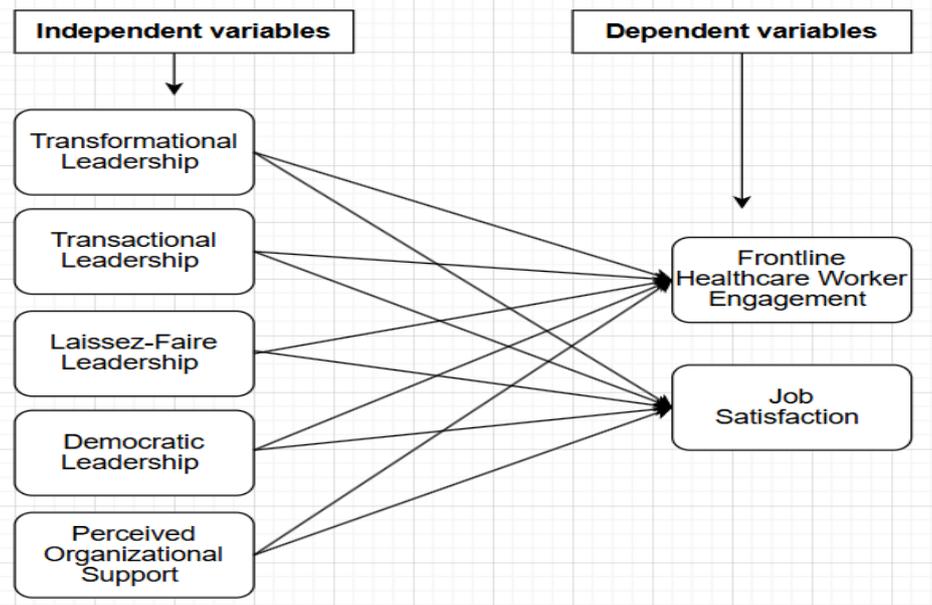
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Figure 1: Model and relationship between variables

- **Laissez-Faire Leadership:** Being operationalized as a management style, which entails the lack of leadership, leaders abandon making of decisions and are careless about the performance of the followers (Bass & Avolio, 2017).

- **Democratic Leadership:** Operationalized as the leadership style in which the leaders incorporate their followers into the process of decision-making, involving them into the process and promoting their common responsibility.

- **Perceived Organizational Support:** Measured as how firmly healthcare employees have the feeling that their organization respects their work and cares about their welfare (Rhoades & Eisenberger, 2018). This is an isolated factor that affects interest and satisfaction.

3.4 Data Collection Tools

The methodology have been a structured questionnaire as the main research tool. Likert scales have been used to measure all the variables. The questionnaire used have been based on already established and validated forms of questionnaire in existing literature but with slight modifications to adhere to the context of Sydney healthcare workers.

- **For Leadership Styles:** It consists of items that measure the perceptions of the respondents regarding the leadership behaviours of their immediate supervisor. An adapted 5-point Likert scale (e.g., 1 = Strongly Disagree: 5 = Strongly Agree) has been modified on the Multifactor Leadership Questionnaire (MLQ) (Bass & Avolio, 2019).

- **For Perceived Organizational Support:** Items evaluate beliefs of the employees on how the organization cares and offers support. The 5-point Likert scale basis has been based on the Survey of Perceived Organizational Support (SPOS) (Eisenberger et al., 1986).

- **For Frontline Healthcare Worker Engagement:** Among the strong candidates, there is the Utrecht Work Engagement Scale (UWES-9 or UWES-17 in adaptation of brevity, or relevance with 7 points of frequency (e.g., 0 = Never and 6 = Always) (Schaufeli et al., 2018).

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- **For Job Satisfaction:** The use of adapted items of the Job Descriptive Index (JDI) or any other related scale has been employed with a 5-point Likert scale (Smith et al., 1969).

The questionnaire shall also contain a demographic section that shall capture demographic information like age, gender, years of experience, and position in the healthcare system. To be able to compare the experiences regarding COVID, a particular question has been added that defines whether or not the respondent was actively working in the healthcare sector at the time when the COVID situation was at its strongest (e.g., March 2020 - December 2021) to enable the comparison of the answers.

3.5 Data Collection Procedure

The process to obtain necessary ethical approval has been carried out (in time) by getting the concerned institutional review boards before the data collection process. Administrators of the healthcare facilities selected would be officially asked to be. Self-administered questionnaires have been utilized in collecting data. It is informed to the participants of what the study is all about, guarantee anonymity and confidentiality, and sign an informed consent (American Psychological Association [APA], 2020). As the healthcare setting is rather sensitive, especially in the aftermath of the pandemic, attempts have been made to avoid interference with the daily work. The survey has been done through the use of questionnaires, which have been administered and retrieved conveniently among the healthcare workers.
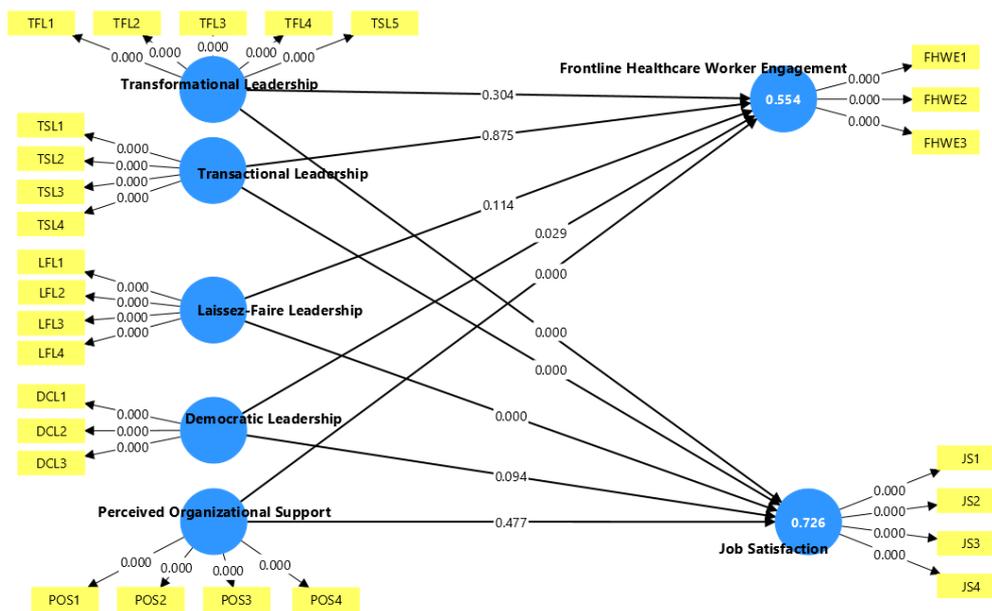

Figure 2: R values and significance

3.6 Data Analysis Tools

Data analysis has been done using Smart PLS-4. Analysis of the following has been carried out using bootstrapping to find out significant relationships between variables.

4.7. Ethical Considerations

The research follows every ethical consideration by the American Psychological Association (APA, 2020). All participants have been given informed consent, making them voluntarily enrolled in the study and able to withdraw anytime. The confidentiality of responses and ensuring anonymity have been well observed by using anonymous questionnaires and data storage in secured places. The data have been kept in a secure way and kept only to perform the research only and the data should only be accessed by the research team.

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Table 1: Mean, STDEV, T values, p values

| Mean, STDEV, T values, p values	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Democratic Leadership -> Frontline Healthcare Worker Engagement	0.180	0.181	0.082	2.189	0.029
Democratic Leadership -> Job Satisfaction	0.130	0.136	0.078	1.675	0.094
Laissez-Faire Leadership -> Frontline Healthcare Worker Engagement	0.143	0.142	0.090	1.582	0.114
Laissez-Faire Leadership -> Job Satisfaction	0.300	0.296	0.072	4.190	0.000
Perceived Organizational Support -> Frontline Healthcare Worker Engagement	0.473	0.469	0.082	5.746	0.000
Perceived Organizational Support -> Job Satisfaction	0.034	0.040	0.048	0.711	0.477
Transactional Leadership -> Frontline Healthcare Worker Engagement	-0.013	-0.011	0.080	0.157	0.875
Transactional Leadership -> Job Satisfaction	0.248	0.243	0.070	3.549	0.000
Transformational Leadership -> Frontline Healthcare Worker Engagement	0.071	0.075	0.069	1.028	0.304
Transformational Leadership -> Job Satisfaction	0.277	0.275	0.059	4.727	0.000
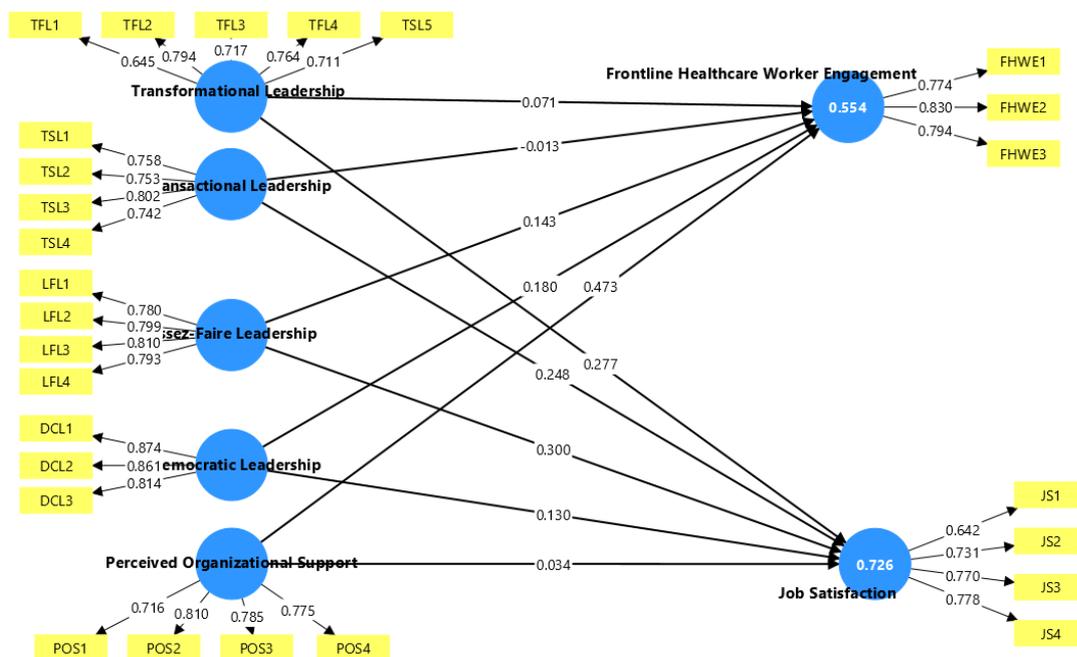
Figure 3: R values and model explanation

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Table 2: Measurement Model Assessment Summary

Construct Name	Outer Loadings Range	Cronbach's Alpha	Composite Reliability (rho_c)	AVE	VIF Range (Indicators)
Democratic Leadership	0.814 - 0.874	0.808	0.886	0.722	1.585 - 1.902
Frontline Healthcare Worker Engagement	0.774 - 0.830	0.717	0.842	0.639	1.301 - 1.560
Job Satisfaction	0.642 - 0.778	0.709	0.821	0.536	1.200 - 1.514
Laissez-Faire Leadership	0.780 - 0.810	0.807	0.873	0.633	1.527 - 1.713
Perceived Organizational Support	0.716 - 0.810	0.775	0.855	0.596	1.537 - 1.725
Transactional Leadership	0.711 - 0.802	0.762	0.848	0.583	1.374 - 1.695
Transformational Leadership	0.645 - 0.794	0.777	0.849	0.530	1.346 - 1.728

Fornell-Larcker Criterion: All square roots of AVE (diagonal, e.g., Democratic Leadership = 0.850) were greater than inter-construct correlations, supporting discriminant validity.

Table 3: Discriminant Validity (Fornell-Larcker Criterion & HTMT Highlights)

Heterotrait-Monotrait Ratio (HTMT):

Relationship	HTMT Value	Concern
Job Satisfaction <-> Democratic Leadership	0.930	High
Laissez-Faire Leadership <-> Job Satisfaction	0.996	Very High
Perceived Organizational Support <-> Frontline Healthcare Worker Engagement	0.929	High
Transactional Leadership <-> Job Satisfaction	1.005	Critical
Transformational Leadership <-> Job Satisfaction	0.992	Very High

Note: HTMT values above 0.90 (or 0.85, conservatively) indicate potential discriminant validity issues. Values exceeding 1.00 are particularly problematic.

Table 4: Structural Model Results (Path Coefficients & Total Effects)

Relationship	Path Coefficient (Beta)	Total Effect (Beta)
Democratic Leadership -> Frontline Healthcare Worker Engagement	0.180	0.180
Democratic Leadership -> Job Satisfaction	0.130	0.130
Laissez-Faire Leadership -> Frontline Healthcare Worker Engagement	0.143	0.143
Laissez-Faire Leadership -> Job Satisfaction	0.300	0.300
Perceived Organizational Support -> Frontline Healthcare Worker Engagement	0.473	0.473
Perceived Organizational Support -> Job Satisfaction	0.034	0.034
Transactional Leadership -> Frontline Healthcare Worker Engagement	-0.013	-0.013
Transactional Leadership -> Job Satisfaction	0.248	0.248
Transformational Leadership -> Frontline Healthcare Worker Engagement	0.071	0.071
Transformational Leadership -> Job Satisfaction	0.277	0.277

Table 5: R-squared Values

Dependent Variable	R-squared	R-squared Adjusted
Frontline Healthcare Worker Engagement	0.554	0.546
Job Satisfaction	0.726	0.721

2. Interpretation of Results

This study utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) to investigate the influence of various leadership styles (Democratic, Laissez-Faire, Transactional, Transformational) and Perceived Organizational Support (POS) on Frontline Healthcare Worker Engagement and Job Satisfaction. The analysis followed a two-step approach: assessing the measurement model and then the structural model, using data from 285 respondents.

2.1 Measurement Model Assessment: Ensuring Data Quality

The measurement model evaluates how well the observed indicators measure their respective latent constructs.

Reliability and Validity: All constructs demonstrated good indicator reliability, with most outer loadings exceeding the 0.708 threshold. Even those slightly below, like JS1 (0.642) and TFL1 (0.645), are acceptable as they are above 0.40 and generally retained if content validity is important.

Construct reliability was excellent, as evidenced by Cronbach's Alpha (all > 0.70) and Composite Reliability (rho_c) (all > 0.821). This indicates high internal consistency within the scales. Convergent

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validity was also confirmed by Average Variance Extracted (AVE) values, all of which exceeded the 0.50 threshold (ranging from 0.530 to 0.722), meaning each construct explains more than half the variance of its indicators.

Discriminant Validity Concerns: While the Fornell-Larcker Criterion was satisfied, suggesting distinction, the more stringent Heterotrait-Monotrait Ratio (HTMT) revealed significant concerns. Several HTMT values exceeded the recommended threshold of 0.90, notably:

- *Job Satisfaction with Democratic Leadership (0.930), Laissez-Faire Leadership (0.996), Transactional Leadership (1.005), and Transformational Leadership (0.992).*

- *Perceived Organizational Support with Frontline Healthcare Worker Engagement (0.929).*

An HTMT value of 1.005 between Transactional Leadership and Job Satisfaction is particularly problematic, strongly indicating a lack of discriminant validity; these constructs are empirically indistinguishable in this dataset. High HTMT values suggest that respondents may not clearly differentiate between these concepts, implying conceptual overlap or measurement issues. This necessitates cautious interpretation of relationships involving these highly correlated constructs.

Collinearity: Variance Inflation Factor (VIF) values for all individual indicators were well below 5 (max 1.902), confirming that multicollinearity at the indicator level is not a concern, ensuring stable regression estimates.

2.2 Structural Model Assessment: Understanding Relationships

The structural model assessed the hypothesized direct relationships between the independent and dependent variables, and the model's explanatory power. (Note: Without bootstrapping results, statistical significance of path coefficients cannot be definitively stated; interpretation is based on coefficient magnitude).

Explanatory Power (R-squared): The model demonstrates substantial explanatory power:

- **Frontline Healthcare Worker Engagement:** The R-squared value of 0.554 indicates that 55.4% of the variance in engagement is explained by the independent variables. This is a substantial finding, highlighting the model's effectiveness in predicting engagement.

- Job Satisfaction: An impressive R-squared value of 0.726 means that 72.6% of the variance in job satisfaction is explained. This indicates a very strong predictive capability of the leadership styles and perceived organizational support for job satisfaction.

Path Coefficients (Direct Effects):

On Frontline Healthcare Worker Engagement:

- **Perceived Organizational Support (0.473):** This is the strongest positive predictor of Frontline Healthcare Worker Engagement. It profoundly highlights that healthcare workers' perception of organizational care and support is paramount for their engagement. Organizations investing in supportive environments are likely to see significant increases in engagement.

- **Democratic Leadership (0.180):** Shows a moderate positive effect. Involving healthcare workers in decision-making contributes positively to their engagement.

- **Laissez-Faire Leadership (0.143):** Interestingly, a small positive effect. This is a counter-intuitive finding, potentially suggesting that for highly autonomous healthcare professionals, a degree of independence might foster engagement. This needs to be explored further, considering the nuances of self-directed work.

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- **Transformational Leadership (0.071):** Exhibits a small positive effect. While inspiring, its direct impact on day-to-day engagement appears less prominent than organizational support or democratic practices.

- **Transactional Leadership (-0.013):** Shows a negligible, near-zero negative effect. This suggests that a purely transactional approach has minimal, if any, positive influence on healthcare worker engagement.

On Job Satisfaction:

- **Laissez-Faire Leadership (0.300):** This is the strongest positive predictor of Job Satisfaction, a surprising and counter-intuitive result. If significant, it could imply that highly autonomous healthcare professionals highly value the freedom and non-interference offered by a laissez-faire approach, leading to higher job satisfaction. However, this finding is heavily qualified by the very high HTMT value (0.996) with Job Satisfaction, suggesting potential measurement overlap.

- **Transformational Leadership (0.277):** Shows a substantial positive effect, aligning with existing literature that highlights the role of inspirational leadership in fostering employee contentment.

- **Transactional Leadership (0.248):** Also demonstrates a significant positive effect. Clear expectations and contingent rewards contribute positively to job satisfaction, likely through a sense of fairness and accomplishment. This finding, however, is severely impacted by the critical HTMT value (1.005) with Job Satisfaction, strongly suggesting that these constructs are not distinct.

- **Democratic Leadership (0.130):** A smaller positive effect. While contributing to a positive environment, its direct impact on satisfaction is less pronounced than other leadership styles.

- **Perceived Organizational Support (0.034):** Shows a negligible positive effect. This is a notable contrast to its strong influence on engagement. It suggests that while POS strongly drives engagement, its direct impact on personal job contentment might be indirect or minimal in this model, possibly operating through engagement.

2.3 Discussion and Implications

The findings offer critical insights for healthcare organizations. The paramount importance of Perceived Organizational Support for Frontline Healthcare Worker Engagement is undeniable. Organizations must prioritize creating a supportive environment, ensuring adequate resources, and fostering a sense of care for their staff. This have been a key driver of sustained engagement.

Regarding Job Satisfaction, the results present a more complex picture. While Transformational Leadership positively influences satisfaction, the unexpectedly strong roles of Laissez-Faire and Transactional Leadership are intriguing. This could imply that highly skilled healthcare professionals value autonomy and clear, merit-based systems as much as, or even more than, purely inspirational leadership when it comes to their personal job contentment. However, the pervasive discriminant validity issues (high HTMT values), especially between several leadership styles and Job Satisfaction, severely impact the interpretation of these specific relationships. It strongly suggests that respondents might perceive these leadership styles and their job satisfaction as closely intertwined, making empirical distinction difficult. This could be due to conceptual overlap in the scales or how healthcare workers broadly define "good leadership" as inherently contributing to their "satisfaction.

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2.4 Limitations and Future Research

A significant limitation of this study is the high HTMT values, particularly the value exceeding 1.00 between Transactional Leadership and Job Satisfaction. This indicates a strong lack of discriminant validity, meaning these constructs are not empirically distinct in this dataset. Future research should rigorously re-evaluate the measurement instruments or explore alternative conceptualizations to ensure greater distinction between these constructs. Additionally, without the bootstrapping results (t-values, p-values), the statistical significance of the path coefficients cannot be confirmed, limiting definitive conclusions about causality. Future presentations should always include this crucial information.

Further research could also investigate mediating or moderating variables to uncover the mechanisms through which these relationships operate. For instance, is engagement a mediator between POS and Job Satisfaction? Exploring how different healthcare contexts or cultural backgrounds might influence these relationships would also be valuable for generalizability.

Future research should rigorously re-evaluate measurement instruments to address discriminant validity concerns, particularly regarding leadership styles and job satisfaction. Additionally, exploring mediating/moderating variables and examining these relationships across diverse healthcare contexts and cultural backgrounds would be valuable.

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