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The Influence of Occupational Stress, Anxiety, Work Engagement and Perceived Organizational Support on Innovation Outputs at XYZ Hospital During COVID-19 Pandemic

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ABSTRACT

Innovative approaches are needed to improve health, prevent disease, implement new treatments, and deliver safe, high-quality care. This has always been important, but during the current COVID-19 pandemic, it has become even more relevant. The purpose of this study is to examine the relationship between the antecedents of Innovative Behaviour and Innovation Outputs in nurses who work at XYZ Hospitals, incorporating Innovative Behaviour as a mediator. This study used a quantitative survey with a purposive sampling technique to collect data from nurses in XYZ hospital in Banten Province. There are 160 eligible respondents. The data were analyzed with PLS-SEM using SmartPLS software. It was found that Innovative Behaviour has a positive and significant influence on Innovation Outputs. Work Engagement, as well as Perceived Organizational Support, was found to have a positive and significant influence on Innovative Behaviour. Meanwhile, Occupational Stress and Anxiety didn't have a significant influence on Innovative Behaviour. This study has implications for hospital management in developing nurses' innovative behaviour and innovation outputs.

Keywords: *Innovation Outputs, Innovative Behaviour, Nurse, COVID-19*

INTRODUCTION

Since the emergence of SARS-CoV-2 in 2019, the world has been hit by the COVID-19 pandemic, bringing all organizations in general and especially health organizations and the professionals within them to focus on innovation.[1] The terms "innovation" and "innovative" are widely used in various fields including the health sector. However, until now there is no comprehensive and generally accepted definition of innovation. Several sciences (economics, sociology, geography, and public health sciences) apply slightly different concepts about innovation.[2]

Innovation is critical for quality development of an organization, and healthcare organization is no exception.[3] Innovation in healthcare can be described as a process that can be achieved through the implementation of new and better ideas through higher quality care, better health

promotion, and disease prevention.[4] Innovation in the healthcare sector is a critical issue in ensuring both efficiency and effectiveness in a healthcare environment that is constantly changing.[5,6] Through innovation, the quality and effectiveness of treatment and services provided can be improved.[7]

Healthcare systems are facing difficulties in finding out the solutions to the emerging needs of the population.[8] So, innovation become crucial aspect for finding out the solutions and to overcome future challenges such as staff shortages, population aging and reduced funding.[8,9] But while innovation is acknowledged to be critical, healthcare systems are rigid systems that are difficult to embrace changes. Healthcare systems in many regions are slow in adapting, innovating and improving the quality of services provided at a sufficient pace.[3,10,11] The healthcare system is slower, not as smart and no better at innovating compared to other sectors.[12]

Based on the Global Innovation index 2021, when it comes to innovation, Indonesia ranks 87th (in general). [13] Innovation is a continuous challenge for existing healthcare providers and systems.[2] As a response to the rapid development and advancement of science and technology, a hospital as an organization engaged in health services must participate in promoting innovation in the healthcare sector.[14]

Introduction of a change in a hospital is not an easy task, this is because hospitals are highly complex organizations characterized by many professional groups and a highly regulated system. The difficulty of introducing a change in the hospital system is also related to the culture that has been embedded and the various rules, values, and logics of the various professionals involved in the hospital.[15]

Hospitals in providing health services not only have to face internal challenges but also external challenges.[16] One of the external challenges is the growth in the number of hospitals, which creates competition between one hospital and another. The growth of hospitals in Indonesia has increased to around 9.6% annually.[17] To be able to increase the competitiveness of hospital in providing the best health services, there is a need for innovation. [5,6,18] Therefore, innovation within the hospital is important.

Employees are an important source of innovation. Employees play a particularly important role in the health sector, which is a multi-stakeholder service environment.[19] Professionals who work in the health sector also need to use innovative approaches when treating and caring for various patients.[6] A nurse is one of the professionals who work in the field that provides health services.[20] Nearly half of the global workforce consists of nurses and midwives (around 20 million globally for nurses).[21] The ratio of nurses per 100,000 population in Indonesia (2018) is 213 with a total number of 511,191 nurses in 2021.[22,23] Nurses are critical thinkers, they are at the forefront of care delivery and often innovate by identifying which processes are more efficient or reusing items for alternative uses.[14] Nurse innovation means developing new nursing practices, replacing traditional ones, or improving the current ones. However, the nursing staff felt that they lacked the necessary support to take the risks required to innovate.[24]

Despite the high demand and increasing need for innovations in healthcare, scientific research in this area is

still very limited.[2] Based on previous research, one of the factors that influence innovation outputs is innovative behaviour. Healthcare professionals' innovative behaviour plays an important role in innovation but the determinants of innovative behaviour are not yet fully understood.[18] Research on potential antecedents of innovative behaviour has also not received enough attention,[25] There are only a few studies that have investigated Innovative Behaviour in hospital employees.[26]

There are several studies related to the effect of perceived organizational support (POS), occupational stress (OS), work engagement (WE) and anxiety (A) on innovative behaviour (IB), and some previous studies on the effect of innovative behaviour (IB) on innovation outputs (IO). However, most of them were conducted in non-medical populations. [11,27,28,29,30]

In addition, there are not many studies that examine the effect of innovative behaviour as a mediator on innovation outputs. Researchers only found one study that conducted by Cunha et al. (2022) in Portugal that used innovative behaviour as a mediator in the research model, and organizational support, work engagement, stress, and anxiety as the independents but even in that study the indirect effect's results of innovative behaviour on innovation output were not presented. Research related to nurses' innovation outputs in Indonesia has also never been conducted, especially during the COVID-19 pandemic. Therefore, investigating the influence of Occupational Stress, Anxiety, Work Engagement, and Perceived Organizational Support on Innovative Behaviour and Innovative Behaviour on Innovation Outputs, as well as the mediating effect of Innovative Behaviour on nurses is important.

METHODS

In this study there are four independent variables including Occupational Stress, Anxiety, Work Engagement and Perceived Organizational Support, there is one mediating variable called Innovative Behaviour and one dependent variable called Innovation Outputs. Innovation outputs are a combination of two words, "innovation" and "outputs". Innovation means a change, either on a small or large scale.[31] While outputs are the results that a change has achieved, through implementing new ideas that change products, services, or processes in an organization.[30] Lukes & Stephan (2017) define Innovation Outputs as outputs that are achieved when a product, service or process has been improved and used in the organization through the adaptation of ideas and the implementation of these ideas. This emphasizes that something can be categorized as Innovation Outputs if the innovation is used/adapted by the organization.[30]

Innovation is challenging, complex, and risky for employees, leaders, and the organization itself.[7] However, for innovation to succeed, new ideas must be followed up and implemented.[30] Therefore, it is imperative that we focus more on what leads to the implementation of new ideas and initiatives.[25] Innovation plays an important role in an organization,[32] and hospitals are no exception, therefore the contribution of employees, including nurses as the main resource in the hospital, is also important.

Innovative behaviour is one of the factors that is known to have a positive influence on innovation outputs.[30]

Innovative behaviour may have been viewed as inappropriate or disrespectful in the past, but with today's increasingly competitive work environment, innovative behaviour of employees is increasingly desirable.[25] Innovative Behaviour positively influences Innovative Outputs, and with Innovative Behaviour the possibility of obtaining more innovative products / procedures, especially in the health sector is greater.[18] However, some studies show that compared to other professions, Innovative Behaviour in nursing is classified at a medium or low level.[33]

Occupational Stress refers as harmful emotional and physical responses that occur when the magnitude of job demands does not match the employee's resources, abilities, and needs.[34] Stress that has a positive effect is considered a challenge[35], such as time urgency, workload, and job responsibilities.[27] Meanwhile, the ones that have negative effects are considered as hindrances.[35] Hindrance Stressors include organizational politics, bureaucracy, role ambiguity, workload, and concerns about job security.[27,28] The effects of Occupational Stress are important issue in global healthcare management and services.[36] Compared to other occupational professions, people working in healthcare are vulnerable and have high levels of stress.[37] Occupational stress is known to affect Innovative Behaviour. A study by Chatzigianni et al. (2018) found a positive and significant relationship between Occupational Stress and Innovative Behaviour.[34]

Anxiety is a state of apprehension or uneasiness due to the anticipation of a perceived or real threatening situation.[38] Anxiety can be classified into 2 types, that is, state anxiety and trait anxiety. Trait Anxiety is formed through personal background in response to a stimulus, whereas State Anxiety is a temporary and detectable feeling resulting from a psychological stimulus and a combination of emotions such as fear, distress, and tension. Nurses routinely face and deal with circumstances related to patient suffering, pain, and death while at work. And this causes several psychological reactions, one of them is anxiety.[39] Anxiety is common among healthcare workers who are directly involved in managing patients during the COVID-19 pandemic.[38] Anxiety influences attitudes and behaviours[40] as well as produces different behavioural outcomes.[41] Anxiety in low levels help motivate and generate a sense of excitement within a person, however constant exposure to anxiety can have negative consequences on a person's physical, psychological and performance health. A large number of studies have highlighted the negative effects of high levels of anxiety, these include loss of desire to eat, sleep disturbances, dizziness, and nausea or vomiting.[38] However, well-managed anxiety can motivate people to be more creative.[42] A study by Cunha et al. (2022) found a positive and significant effect of Anxiety on Innovative Behaviour.[18]

Engagement is the involvement, commitment, participation, and a focused effort of employees. Engage means enjoying work, even not during working hours and not seeing work as a burden.[32] Work engagement is an affective-motivational state associated with work.[28] Work engagement has a positive influence on nurses' innovative behaviour.[33] There are some characteristic of Work engagement such as high levels of energy and mental endurance at work (vigour), strong involvement in work, feelings of

enthusiasm, pride, and significance (dedication), and being happily immersed and fully focused in one's work (absorption).[28]

Perceived Organizational Support is the perception of employees about how the organization cares about its members' well-being and their expectations.[43] When employees feel that the organization cares about their well-being, impartial, values honest criticism and in other words organization supports its employees. They as employees often respond by creating and initiating creative ideas, seeking opportunities, solving problems, and increasing Innovation Outputs.[35,44] A study by Nazir et al. (2018) on nurses found a positive effect of Perceived Organizational Support on Innovative Behaviour.[45]

Based on the explanation above, the authors propose the following hypotheses:

H1: Occupational Stress has a positive influence on nurses' Innovative Behaviour

H2: Anxiety has a positive influence on nurses' innovative behaviour.

H3: Work Engagement has a positive influence on nurses' Innovative Behaviour

H4: Perceived Organizational Support has a positive influence on nurses' Innovative Behaviour

H5: Innovative Behaviour has a positive influence on nurses' Innovation Outputs

This study is a quantitative and survey research with a cross-sectional approach. Individuals are the Unit of Analysis in this study. [46] In general, there are two categories of data source, which are primary and secondary data source.[47] In this study, primary data source were collected from nurses who work at XYZ Hospital using a questionnaire.

The minimum sample size in this study was determined based on power analysis using G-power and the inverse square root method. Those methods are the recommended method for determining the minimum sample size required in the PLS-SEM analysis method. The minimum sample size based on the calculation with G power is 85 while based on the inverse square root method is 160.[48,49] The sampling method used in this research is non-probability sampling (purposive sampling), and the author used a questionnaire as a tool to collect data. The questionnaire used in this study has been tested for its reliability and validity in previous studies and has passed preliminary tests. There were 50 questions given to all nurses at XYZ Hospital, Tanggerang City, Banten Province in September-November 2022. Out of 624 nurses of XYZ Hospital, 160 nurses were willing to fill out the research questionnaire.

The variables in this study are operationalized through scales that have been validated in previous studies. The author adapted the scale by Lukeš and Stephan (2017) to measure Innovation Outputs (3 items), the researcher also modified several scales to be used in this study such as the Innovative Behaviour Scale by Wang et al. (2019) in measuring the level of Innovative Behaviour among nurses (13 items), the Brief Nursing Stress Scale (BNSS) scale by Vidal-blanco (2021) to assess stress in nurses (5 items), the Generalized Anxiety Disorder Scale (GAD-7) scale to assess Anxiety in nurses (11 items), the Utrecht Work Engagement Scale-9 (UWES-9) scale to assess Work Engagement in nurses (10 items) and the scale by Cunha, Marques and Santos (2022) to assess Perceived Organizational Support of nurses (8 items). Each item was scored

using a 5-point Likert scale ("1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5 strongly agree)[18,30,33,46,50]

After the data collection, data analysis was then carried out by using the Partial Least Square Structural Equation Modeling (PLS-SEM) method with the SmartPLS 3.2.9. PLS-SEM estimates the parameters of a set of equations in SEM by combining principal component analysis with regression-based path analysis.[51] The PLS-SEM analysis method is widely used in various social science disciplines, including human resource management.[52] There are several steps in the PLS-SEM analysis. The first step is to analyse the measurement model.[51] The data in this study were assessed based on the reflective measurement model.[52] The second step is assessing the structural model (inner model).[52] And then, it will be proceed with hypothesis testing with bootsrapping menu in SmartPLS.

Assessment of the Measurement Model (Outer Model) is divided into several tests, including reliability tests (indicators and constructs) and validity tests (constructs). Indicator reliability is assessed by looking at the outer loading value.[52] Construct Reliability is assessed by looking at the Cronbach's alpha and composite reliability values.[51] For Construct validity, there are 2 types of tests used in this study, the convergent validity test which is conducted by looking at the AVE value and the discriminant validity test by examining the value of the Heterotrait-Monotrait Ratio.[52]

The second step in analysis with PLS-SEM is assessing the structural model (inner model).[52] Standard criteria in assessing the structural model, including Variance Inflation factor (VIF) to assess Collinearity (ideally VIF value < 3.), Coefficient of determination (R^2 value is categorized into three levels: weak (0.25), moderate (0.50) and substantial (0.75) to measure the model's explanatory power), and f^2 effect size (f^2 value of 0.02, 0.15 dan 0.35 indicate small, medium and large effect size).

Then, hypothesis testing is conducted to see the significance between constructs in the research model. This study uses a one-tail hypothesis test and a significance level of 0.05. The T-Table for one-tail is 1.645. The relationship between the variables is statistically significant if the p-value <0.05 and t-statistic >1.645.[52,53]

RESULT DAN DISCUSSION

The number of respondents in this study was 160 people. Table 1 shows the demographic profile data of eligible respondents. The majority of respondents came from the inpatient department (46.88%), female (75%), and had 1-3 years of work experience at XYZ Hospital (36.25%). Based on age group, most respondents were from the age group of 24-39 years (78.3%). The majority of the respondents are married (56.25%) and living with family (56.88%). In terms of working hours, most of them worked 43-50 hours per week (52.5%).

Table 1. Respondent Profile

Description	Category	Amount (n)	Percentage (%)
Gender	Female	120	75
	Male	40	25

Description	Category	Amount (n)	Percentage (%)
Total		160	100
Age (years)	17-23	12	7.5
	24-39	125	78.13
	40-55	23	14.38
Total		160	100
Marital Status	Married	90	56.25
	Single	69	43.13
	Divorced	1	0.63
Total		160	100
Having a child	Yes	79	49.38
	No	81	50.63
Total		160	100
Living Status	Living with family	91	56.88
	Living with friends or colleagues	9	5.63
	Living alone	60	37.50
Total		160	100
Education	D3	12	7.50
	S1	5	3.13
	S1+NERS	141	88.13
	S2	2	1.25
Total		160	100
Department	Outpatient department	21	13.13
	Inpatient department	75	46.88
	Emergency department	15	9.38
	ICU	7	4.38
	ICCU	2	1.25
	HCU	5	3.13
	HCCU	3	1.88
	Operating Theatre (OT)	12	7.50
	Hemodialysis department	10	6.25
	Others	10	6.25
Total		160	100
Has been working at XYZ Hospital for …. years	≤ 1	6	3.75
	1-3	58	36.25
	3-5	52	32.50
	5-10	20	12.50
	≥10	24	15.00
Total		160	100
Working hours per week	35-42	48	30.00
	43-50	84	52.50
	>50	28	17.50
Total		160	100

The first stage in PLS-SEM analysis is to analyze the reflective measurement model (outer model).[51] Reliability is a test of how consistent a measurement measures

whatever concept is being measured.[46] Indicator reliability is assessed based on the outer loading value.[54] The analysis results in appendix 1, show that 50 indicators meet the outer loading criteria. In order for an indicator to be considered reliable, the recommended outer loading value is > 0.708, if a value between 0.40 and 070 is found, the item is considered for deletion only if deleting the item can increase the recommended composite reliability and AVE values.[54] Out of 50 indicators in total, 40 indicators have an outer loading value> 0.708 and the remaining 10 indicators in the range of > 0.40 and 0.70.

The results of the internal consistency reliability test with Cronbach's alpha on all constructs show a value greater than 0.7 and the assessment with composite reliability for all constructs shows a value ranging between 0.7 and 0.95,[51] which indicates the constructs' reliability of the respective model. Convergent validity assessment is done by looking at the AVE value. The results of the analysis conducted in this study show that all constructs in this study have a value ≥ 0.5.[55] Therefore, all indicators and constructs in this study are reliable and valid to be used in the research.

Table 2 Heterotrait-Monotrait Ratio (HTMT)

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Anxiety						
(2) Innovation Outputs	0,174					
(3) Innovative Behaviour	0,176	0,685				
(4) Occupational Stress	0,657	0,159	0,143			
(5) Perceived Organizational Support	0,221	0,405	0,702	0,294		
(6) Work Engagement	0,325	0,494	0,631	0,287	0,599	

Source: (Smart-PLS output, 2022)

The final step in the reflective measurement model analysis is to assess discriminant validity with the HT/MT ratio. Some recent studies have shown that the HT/MT ratio is better than the Fornell-Larcker Criterion (F&L) in assessing Discriminant Validity.[52] Table 2 shows all the HT/MT ratio values <0.90 which is in accordance with the recommended values.[52] This shows that all constructs are well-discriminated and indicates that each question item used is suitable for use in research because it represents each variable.

Based on several tests that have been carried out to test reliability and validity, it can be concluded that all indicators in this research model are reliable and valid.

Table.3 Inner Variance Inflation factor (VIF) and R square

	Innovation Outputs (R^2 =0.352)	Innovative Behaviour (R^2 =0.523)
Anxiety		1,531
Innovative Behaviour	1,000	
Occupational Stress		1,722
Perceived Organization Support		1,576
Work Engagement		1,549

Source: (Smart-PLS output, 2022)

The second stage in analysis with PLS-SEM is to assess the structural model (inner model).[52] Table 3 shows the VIF value that was used to assess the muticollinearity issue. The VIF value of all constructs in this study is < 3, therefore it can be concluded that there is no multicollinearity issue. It also shows that Innovation Outputs (R^2 =0.352) have weak explanatory power and Innovative Behaviour (R^2 =0.523) has moderate explanatory power. This indicates that the proposed model has adequate estimation capability. In addition, IB has a large effect size on IO with a value of f^2 = 0.542.

Afterward, the data analysis in this study was continued with hypothesis testing by bootstrapping. This test is conducted to determine the relationship between variables in the model and confirm whether the hypothesis in this study is supported.[52] The relationship between these variables is statistically significant if the t-statistic>1.645 and the p-value <0.05.[51] The results are shown in Table 4.

Table.4 Hypothesis Test Results

	Hypothesis	Coefficient	T-Statistics	P-Values	Conclusion
H1	Occupational Stress → Innovative Behaviour	0,058	0,532	0,297	Hypothesis Not supported
H2	Anxiety → Innovative Behaviour	0,017	0,201	0,420	Hypothesis Not supported
H3	Work Engagement → Innovative Behaviour	0,333	4,278	0,000	Hypothesis Supported
H4	Perceived Organization Support → Innovative Behaviour	0,510	6,867	0,000	Hypothesis Supported
H5	Innovative Behaviour → Innovation Outputs	0,593	8,368	0,000	Hypothesis Supported

Source: (Smart-PLS output, 2022)

As shown in Table 4, there are 3 hypotheses that are supported, with t-statistic > 1.645 (one-tail, significance level of 0.05), p-value < 0.05 and positive direction in accordance with the direction of the hypothesis. Meanwhile, the other two hypotheses, such as H1 and H2 are not supported.

The first hypothesis test found that Occupational Stress has a positive but insignificant influence on Innovative Behaviour (t statistic = 0.532, p-value = 0.297). The results of this study differ from the results of research conducted by Cunha et al. (2022) and Luis et al. (2019), where both studies found a positive and significant effect. Other studies have found results that are similar to the results of this study, such as those conducted by Bani-Melhem et al. (2017) and Moeng (2020). The result of their study is Occupational Stress has a positive but insignificant effect.[18,27,35,56]

The second hypothesis test found that Anxiety has a positive but insignificant effect on Innovative Behaviour (t statistic = 0.201, p-value = 0.420). The results of this

study differ from the results of research conducted by Cunha et al. (2022), where the study found a positive and significant influence between Anxiety and Innovative Behaviour.[18]

The third hypothesis test found that Work Engagement has a positive and significant influence on Innovative Behaviour (t statistic = 4.278, p-value = 0.000). If nurses' Work Engagement increases, their Innovative Behaviour will increase too, this is in accordance with the results of research conducted on 738 nurses in Portugal by Cunha et al. (2022) and 374 nurses in China by Y. X Wang et al. (2019).[18,33]

The fourth hypothesis test found that Perceived Organizational Support has a positive and significant influence on Innovative Behaviour (t statistic = 6.867, p-value = 0.000). If nurses' Perceived Organizational Support increases, their Innovative Behaviour will increase too, this is in accordance with the results of research conducted by Labrague & De Los Santos (2020) dan Nazir et al. (2018).[38,45]

The fifth hypothesis test found that Innovative Behaviour has a positive and significant influence on Innovation Outputs (t statistic = 8.368, p-value = 0.000). If nurses' Innovative Behaviour increases, their Innovation Outputs will increase too, this is in accordance with the results of research conducted by Cunha et al. (2022) in Portugal and Sonmez et al. (2019) in Turkey.[4,18]

Table 5. Specific Indirect Effect

	Coefficient	**T Statistics**	**P Values**
Anxiety → Innovative Behaviour → Innovation Outputs	0.010	0.198	0.421
Occupational Stress → Innovative Behaviour → Innovation Outputs	0.034	0.515	0.303
Perceived Organization Support → Innovative Behaviour → Innovation Outputs	0.303	6.215	0.000
Work Engagement → Innovative Behaviour →Innovation Outputs	0.198	3.453	0.000

Source: (Smart-PLS output, 2022)

Table 5. shows the results of mediation testing, which is the indirect effect on Innovation Outputs through the Innovative Behaviour mediation. From the table above, the paths that have an indirect effect are the Perceived Organizational Support path (coefficient=0.303, t-statistic=6.215 and p-value=0.000) and the Work Engagement path (coefficient=0.132 t-statistic=3.453 and p-value=0.000) to the Innovation Outputs through the mediation of Innovative Behaviour. This is supported by the results of the t-statistic and p-value of the tested paths. In both paths that were tested, the p-value <0.05 and the t-statistic> 1.645. Meanwhile, the path test with Anxiety and Occupational Stress as independent variables on Innovation Outputs through Innovative Behaviour mediation has insignificant results. Therefore, it can be concluded that based on the results of this study, Innovative Behaviour mediates the relationship between Perceived Organizational Support and Work Engagement to Innovation Outputs. There is one study conducted in

Portugal that used stress, work engagement, anxiety & organizational support as the independent variables and innovative behaviour as a mediator in the research model, but the indirect effect's results of the study on innovation outputs were not presented.[18]

CONCLUSION

Three out of five hypotheses were proven to be supported. Based on the results, WE and POS have a positive and significant influence on nurses' IB. IB also found to have a positive and significant influence on nurses' IO. But it was found that A and OS didn't have a significant influence on IB.

Hospital managers (HM) need to pay attention to what factors can improve nurses' IB, WE and POS. HM need to know how to make nurses enthusiastic and immersed in working at XYZ Hospital. They also need to pay attention to improve hospital support for nurses. Support can be provided by giving the resources and time needed for nurses to innovate, also by giving encouragement to them to discuss with colleagues in any department in order to improve IO.

In this study, there are several research limitations that can be identified as a concern for further reasearch with similar topics related to IB and IO. Firstly, it was only empirically tested on nurses in one hospital in Banten Province and with a limited number of samples, causing limitations in generalising the results found. In addition, because the data was collected through a survey with a questionnaire in the form of a google form distributed online, this could cause selection bias. With the limitations of this study, it is hoped that further research can be done with a wider scope in more than one hospital in Banten Province or even throughout Indonesia, with various types and a larger sample size so that the results obtained can be generalised to a wider population.

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Appendix 1. Outer Loadings, Cronbach's Alpha (CA), Composite Reliability (CR) and Average Variance Extracted (AVE)

Model Construct & Measurement Item		Loading
Occupational Stress (OS) (CA= 0.897; CR= 0.899; AVE= 0.641)		
OS1	I feel stressed out when dealing with patients who are dying	0.771
OS2	I feel stressed out because of conflicts with my colleagues	0.799
OS3	I feel stressed out because of a lack of support from my colleagues	0.706
OS4	I feel stressed out due to my current workload	0.889
OS5	I feel stressed out due to uncertainty in the care I provide	0.827
Anxiety (A) (CA= 0.940; CR= 0.941; AVE= 0.595) Over the last 2 weeks,…		
A1	I've been bothered by nervousness	0.870
A2	I've been bothered by anxious feeling	0.773
A3	Over the last 2 weeks, I've been on edge	0.757
A4	I am not being able to control my worries	0.806
A5	I am not being able to stop myself from worrying	0.724
A6	I've been bothered by worrying too much about different things	0.729
A7	I've been troubled to relax	0.589
A8	I've been feeling so restless that it's hard to sit still	0.803
A9	I feel like I've become easily annoyed	0.780
A10	I feel like I've become easily irritated	0.848
A11	I've been troubled by feeling afraid as if something awful might happen	0.770
Work Engagement (WE) (CA= 0.892; CR= 0.927; AVE= 0.561)		
WE1	I feel happy when I work intensely	0.634
WE2	I am immersed in my work	0.612
WE3	I get carried away when I'm working	0.719
WE4	I am enthusiastic about my job	0,684
WE5	My job inspires me	0,770
WE6	I am proud of my job	0,806
WE7	At my job, I feel bursting with energy	0,820

WE8	At my job, I feel strong	0,815
WE9	At my job, I feel vigorous	0,833
WE10	When I get up in the morning, I feel like going to work	0.762
Perceived Organizational Support (POS) (CA= 0.939; CR= 0.929; AVE= 0.620)		
POS1	I feel the way of rewarding in my hospital motivates employees to come up with new ideas	0.886
POS2	I feel the way of rewarding in my hospital motivates employees to come up with new procedures	0.749
POS3	I feel my hospital encourages employees who have innovative ideas	0.842
POS4	I feel my hospital has ensured sufficient resources to support the implementation of new ideas	0.730
POS5	I feel my hospital provides time for employees to put their ideas into practice	0.738

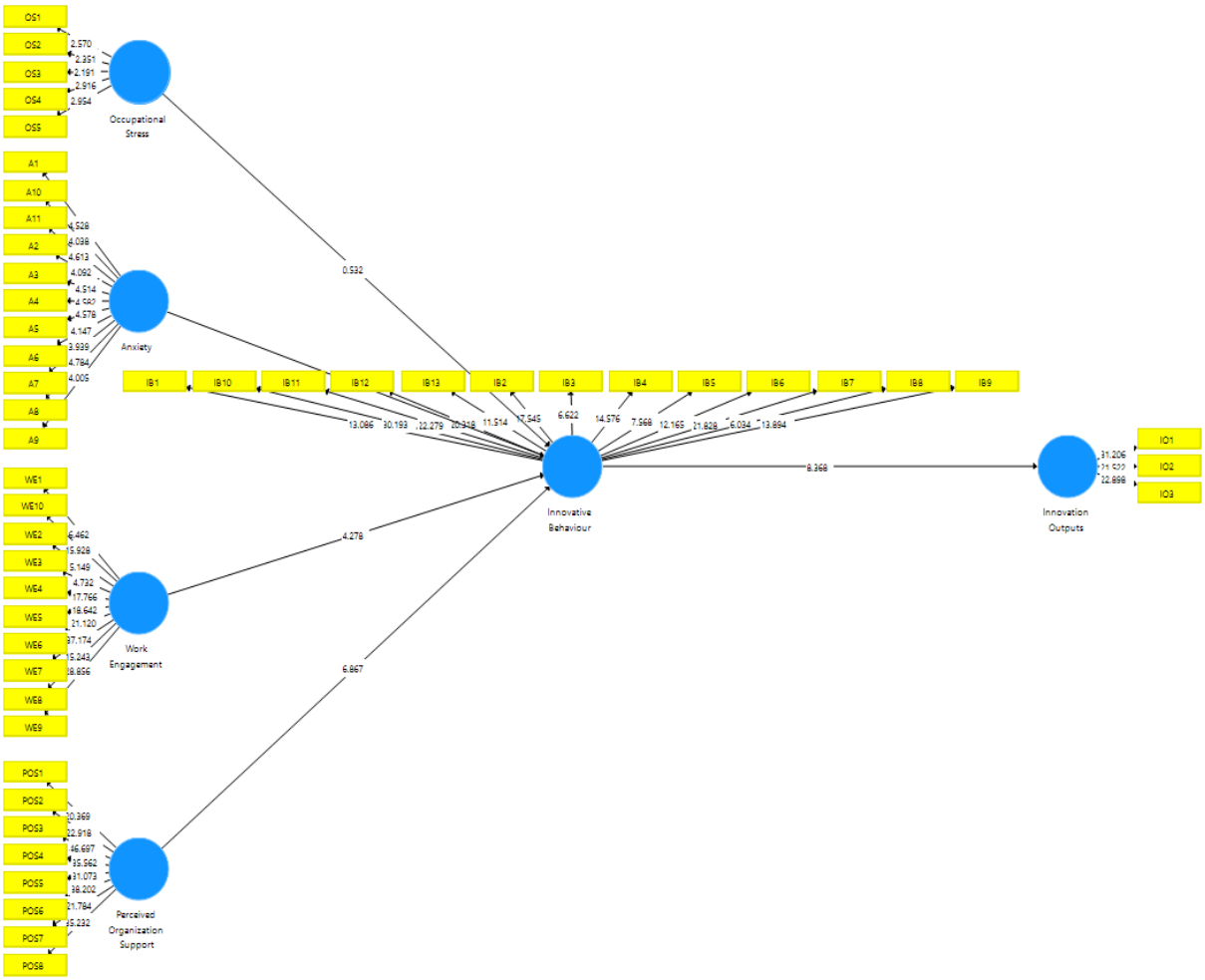
Appendix 1. *cont.*

Perceived Organizational Support (POS) (CA= 0.939; CR= 0.929; AVE= 0.620)		
POS6	I feel my hospital provides time for employees to put their innovations into practice	0.745
POS7	I feel my hospital often recognizes employees who take individual risks for their willingness to defend new projects whether they are successful or not	0.743
POS8	I feel my hospital often encourages employees to talk to colleagues in other departments about ideas for new projects	0.849
Innovative Behaviour (IB) (CA= 0.916; CR= 0.932; AVE= 0.515)		
IB1	I am willing to deal with problems	0.741
IB2	I utilize resources to deal with problems	0.842
IB3	I analyze the probability of solving problems in practice work	0.784
IB4	I seek support from leaders and colleagues	0.742
IB5	I seek recognition from leaders and colleagues	0.582
IB6	I seek cooperation from leaders and colleagues	0.636
IB7	I explore new ways to deal with the problems in working to acquire more data	0.838
IB8	I seek financial help for a new method	0.616
IB9	I develop detailed specific implementation plans for a new method	0.614
IB10	I apply the implementation plan to work	0.755
IB11	I revise the implementation plan	0.673
IB12	I apply the revised implementation plan to work	0.737
IB13	I regularly evaluate the effectiveness of new method	0.714
Innovation Outputs (IO) (CA= 0.792; CR= 0.899; AVE= 0.748)		

IO1	I am often successful at work when I put my ideas into practice	0.860
IO2	Many things created by me are used in my hospital	0.860
IO3	I have always implemented improvements in the places where I worked	0.874
Notes: CA= Cronbach's Alpha CR= Composite Reliability AVE= Average Variance Extracted		

Source: (Smart-PLS output, 2022)

Appendix 2. Bootstrapping Research Model



Source: (Smart-PLS output, 2022)