

## RESEARCH ARTICLE

# Work Environment and Workload of Staff Nurses in Level 2 Hospitals at Cavite, Philippines

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## Abstract

One of the greatest healthcare challenges for today's generation is the improvement of the nursing work environment. Despite the challenges brought by the unhealthy working environment and high workload demand, Filipino nurses stood up high in maintaining professionalism towards their work. The goal of this study is to determine the relationship between the work environment and the workload of staff nurses in level 2 hospitals in Cavite, Philippines. Quantitative non-experimental descriptive correlational design was used, and the standardized questionnaires namely: Practice Environment Scale of the Nursing Work Index (PES-NWI) and NASA Task Load Index (NASA-TLX) were used to gather data from 70 respondents. Results showed that majority were female, belonging to Millennial age (23-38 years old), had baccalaureate degree in Nursing, with a gross monthly salary of Php 15,000.00-19,999.00, being in the institution for more than 6 months to 5 years, and have an average nurse to patient ratio of 11.30. Their level of work environment was favorable in all subscales with a composite score of 3.13 (SD= 0.570). Their perceived workload was high, with a mean score of 71.24 (SD= 12.78). Likewise, nurse to patient ratio had a significant relationship with nurse manager ability, leadership, and support of nurses ( $X^2= 94.26, p < .001$ ) and staffing and resource adequacy ( $X^2= 75.06, p = 0.002$ ). Moreover, significant relationships among the variables of age and physical demand ( $p = .004$ ), length of institutional experience and physical demand ( $p < .001$ ), educational attainment and performance ( $p = .018$ ), educational attainment and effort ( $p = .005$ ), and length of institutional experience and effort ( $p = .001$ ). Last, there is no statistically significant correlation between the overall work environment and the overall workload of nurses ( $r = -.084, p = .491$ ). These findings underscore the importance of measures aimed at enhancing the work environment and workload of staff nurses to prevent further challenges among them.

**Keywords:** *Work environment, workload, PES-NWI, NASA-TLX, staff nurses*

## Introduction

One of the greatest healthcare challenges for today's generation is the improvement of nursing practice or work environment. A healthy work environment is one in which nurses can meet organizational goals while also receiving personal enjoyment from their work (Disch, J., 2002). Nursing shortage, poor quality of nurses' work lives, nurse job dissatisfaction, low productivity, and poor-quality unsafe patient care can all be linked to a lack of a productive and healthy work environment (American Hospital Association, 2002; Hall, 2005; Institute of Medicine, 2004).

According to Carayon, P., and Gurses, A. (2005), nurses were working longer hours than ever before due to increased demand for nurses, an insufficient supply of nurses, reduced staffing and increased overtime, and a decrease in inpatient length of stay. In the study by Hayward, D. A. M. (2014), there were several interconnected environmental and personal factors that impacted

nurses' workload, such as higher patient acuity, increased workload demands, ineffective working relationships among nurses and with physicians, gaps in leadership support, and significant impact on nurses' health and personal wellbeing.

Despite the challenges brought by a poor working environment and high workload demand, Filipino nurses strive to maintain professionalism. In the study by Adanza, J. (2014), the five modern Filipino values of *pananalig* (faith), *katapatan* (honesty), *pag-aaruga* (nurturing), *kasipagan* (industry), and *tibay ng loob* (courage) plays an important role among nurses' level of clinical competency, and these values make one a better nurse. A strong correlation was seen in values of *kasipagan* (industry) and *tibay ng loob* (courage) with nurse's clinical competency, which indicates that nurses were naturally industrious to serve as an instrument for improvement and have high courage in facing challenges most especially in emergencies.

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Nurses' silent plea today is to have a reasonable working environment embedded in a suitable workload to have them render quality and safe nursing care rooted in meeting human needs. Though much literature discusses the work environments of nurses and nurses' workloads respectively, little is known about the relationship between the work environment and the workload of nurses, most especially in the Philippine setting.

The goal of this study is to determine the relationship between the work environment and the workload of staff nurses as the first step towards developing relevant interventions and programs in the future. Also, it hopes to enlighten the government, investors, and management concerning the issues currently experienced by nurses in their present workplace and on how they should deal with the outcomes on nurses, patients, and the community.

The main objective of the study is to determine the relationship between the work environment and the workload of nurses.

Specifically, the following research questions were addressed by this study:

1. What is the level of the perceived work environment of nurses in terms of:
  - 1.1 Nurse participation in hospital affairs,
  - 1.2 Nursing foundations for quality of care,
  - 1.3 Nurse manager leadership,
  - 1.4 Resource, and
  - 1.5 Collegial nurse-physician relationship?
2. What is the level of the workload of nurses in terms of:
  - 2.1 Mental Demand,
  - 2.2 Physical demand,
  - 2.3 Temporal demand
  - 2.4 Performance
  - 2.5 Frustration level, and
  - 2.6 Effort?
3. What is the relationship between work environment and demographic profile of nurses in terms of:
  - 3.1 Age,
  - 3.2 Sex,
  - 3.3 Educational attainment,
  - 3.4 Gross monthly income,
  - 3.5 Work status,
  - 3.6 Length of institutional experience, and
  - 3.7 Nurse to patient ratio?
4. What is the relationship between workload and demographic profile of nurses in terms of:
  - 4.1 Age,
  - 4.2 Sex,
  - 4.3 Educational attainment
  - 4.4 Gross monthly income,
  - 4.5 Work status,
  - 4.6 Length of institutional experience, and
  - 4.7 Nurse to patient ratio?
5. Is there a significant relationship between work environment and workload of nurses?

## Methodology

### Design and Setting

A descriptive correlational design was used to assess the relationship between nurses' work environment and their workload. The study was conducted in different wards or nursing units of level 2 hospitals in Cavite, Philippines. In the Philippines, many hospitals were created in the developed regions, and most of them belong to a level 2 classification. Philippine hospitals are classified into three. Higher levels of classification offer more facilities equipped to handle specialized care. Level 1 classification offers the basic requirement needed in a health facility. Meanwhile, level 2 hospitals have extra facilities capacitated to cater intensive care. Lastly, level 3 hospitals serve as training grounds for doctors and other healthcare workers and have more resources needed for specialized care than the other two classifications.

In the year 2009, there were almost 1800 hospitals in the Philippines, 60% of which were private hospitals; in terms of utilization, 48% of the population who needed inpatient care were confined in private hospitals (Lavado, R. et al., 2011).

Data were collected from February 3 – March 16, 2020.

### Sampling Technique

In this study, PhilHealth-accredited Level 2 hospitals from the first four legislative districts of Cavite (covering 4 cities and 3 municipalities) were considered to be part of this study. Out of the 19 level-2 Cavite hospitals, 13 were part of this study. Inclusion criteria for the hospital must be level 2 per PhilHealth accreditation and must be more than a year in delivering healthcare services.

Non-probability purposive sampling was utilized to select the participants from the level 2 hospitals in Cavite, Philippines based on the inclusion criteria established.

To be included in the study, participants must be currently working in the institution not less than six months and must be willing to participate. Nurses who do not meet the criteria and are working in other hospital areas aside from the general nursing units/wards were excluded.

### Sample size

Among the 13 hospitals initially selected to be part of the study, only four (30.77%) institutions agreed and approved to conduct the study within their respective institution. The limited number of participants was mainly due to disapproval among prospected institutions for conducting research surveys and the global pandemic issue brought by COVID-19.

A total of 77 answered the survey instruments. However, 9% (n=7) had incomplete answers or were nurses found out to be working other than general floors. Thus, their responses were eliminated. With these, a total of 70 responses were included and subjected to statistical treatment.

G\*Power calculator was conducted in a post-hoc analysis to approximate the statistical power of the chosen sample size (n = 70). For a Pearson's r two-tailed test, with the level of significance at 0.05, medium effect size at 0.30 (Cohen, 1969), and the sample size is 70, the power generated was 72.3%. This means that the sample size of 70 respondents has only 72.3% chance of detecting a significant relationship between the work environment and workload of nurses.

### Research Instrument

The research tool was divided into three sections. The first section was the demographic characteristics of the participants which include their sex, age, educational background, gross monthly income, institutional length of experience, work status, and nurse to patient ratio. The second section was about their perceived work environment using the PES-NWI. The last section was the participant's workload using the NASA-TLX subjective workload assessment and the workload comparison card.

#### 1. *Practice Environment Scale of the Nursing Work Index (PES-NWI)*.

The 31-item questions were used to quantitatively measure the factors that enhance a nurse's ability to practice nursing skillfully and deliver high-quality care. The instrument tool made by Lake (2002) called PES – NWI was used. It uses a 4-point Likert scale, ranging from 1 as strongly disagree to 4 as strongly agree. Certain item questions equate with the specific subscales of the PES-NWI. This consists of five subscales: the nurse participation in hospital affairs, nursing foundations for quality of care, nurse manager ability, leadership, and support of nurses, staffing and resource adequacy, and collegial nurse-physician relations. Permission was granted from the author via electronic mail request to use the research tool in this study.

According to the tool's guidelines, reverse coding was observed for the scoring directions. To calculate the subscale score, "strongly agree" was coded as 1, and "strongly disagree" was coded as 4. Once the coding was correct, the nurse-specific subscale scores were calculated as the mean of the subscale items. The mean allows for easy comparison across subscales, and it is used to calculate the overall PES-NWI "composite" score, which is the mean of the five subscale scores. Rather than giving equal weight to the items, this approach gives equal weight to the subscales.

Furthermore, Lake (2002) considers a score of 2.50 as the neutral midpoint for a 4-point response set, with values above 2.50 indicating agreement and a favorable environment and below 2.50 disagreement or an unfavorable environment. The practice environment is classified as either favorable (four or more subscale means exceed 2.5), mixed (two or three subscale means exceed 2.5), or unfavorable Work environment (zero or one subscale exceed 2.5) based on the means of the five PES-NWI subscales.

The internal consistency of the 70 samples was determined using Cronbach's Alpha the alpha score was 0.975, which is very high or excellent.

#### 2. *NASA-Task Load Index (NASA-TLX)*.

In a paper-pen approach, the open version of NASA-TLX Subjective Workload Assessment was used to quantify the level of the workload of staff nurses. The NASA-TLX was a widely used assessment tool that rated the perceived workload to evaluate a task or aspect of performance. It consists of two sheets that the respondents had to fill out. The first sheet is the scoring of workload factors. 20 one-step bipolar scales were used to find the rate of dimensions that results in a score, ranging from 0 to 100. Meanwhile, the second sheet is the rating given. The number given on the second sheet will be accumulated and multiplied to obtain the product score, the sum of the weight ratings for each task is divided by 15 (the sum of the weights). Then, the product score will be accumulated to obtain the weighted workload.

Moreover, Hoonaker, P., et. al. (2011), determines a score of NASA-TLX workload as follows, 0-9.99 as low workload, 10.00-29.99 as medium-low workload, 30.00-49.99 as medium-high workload, 50.00-79.99 as high workload, and 80.00-100.00 as very high workload.

The internal consistency of the 70 samples was determined using Cronbach's Alpha, which resulted in an acceptable score of 0.700.

### Data Collection Methods and Procedures

The researcher acquired approval from the Ethics review board of the University of the Philippines– Open University to uphold the rights of the participants. Then, the researcher facilitated permission and approval through a letter of request to conduct the study in their respective institutions through hospital administrators, chief nurses, or nursing directors.

Upon gaining approval locally, the researcher met the participants where the study was conducted to enlist their maximum cooperation in data collection. In addition, the institution and the participants' identities were kept anonymous throughout the conduct of the study to protect their privacy and

confidentiality. The survey questionnaires were then distributed among selected participants to respond comprehensively according to their own beliefs, knowledge, and understanding which was explained to them before answering the survey questionnaire. The questionnaires were collected after three (3) days to cover all the nursing shifts to increase the response rate. Only the primary investigator had the access to the master list of participants.

### Ethical Consideration

The University of the Philippines– Open University Ethics Review Board granted ethical clearance to conduct the study based on compliance with the ethics requirements, which includes ensuring the protection of privacy and confidentiality of research information, minimizing risk in the participation, and obtaining informed consent. Voluntary participation was highlighted in the recruitment of participants and the participants may opt not to if they desired. A separate informed consent was attached in the questionnaire where the respondents acknowledged. It was distributed in sealed numbered envelopes, and the utmost privacy of the participants was observed.

### Statistical Considerations

Data collected were analyzed using software of IBM SPSS version 23. Descriptive statistics using the mean and percentage were used to describe the socio-demographic characteristics of the respondents. To identify the level of work environment and workload of the respondents, a descriptive statistic using the mean and standard deviation were utilized as their level of measurement is interval because of the result of the scale in measuring the level of work environment and workload.

Moreover, to identify the relationship between the socio-demographic profile with the work environment and workload of the respondents, Chi-square test was used to determine significant relationships at a 5% level of significance. Pearson's *r* correlation was used to analyze the strength and direction of the relationship between the work environment and workload of the respondents. The significant relationship between work environment and workload of respondents was also determined at 5% level of significance.

Table 1. Socio-demographic profiles of staff nurses at Cavite, Philippines

Characteristics	Frequency	Percentage (%)
<b>Age</b>		
39-59 years old	13	18.6
23-38 years old	54	77.1
22 years old and below	3	4.3
<i>Mean age – 31.50</i>		
<b>Sex (Gender)</b>		
Male	17	24.3
Female	53	75.7
<b>Educational Attainment</b>		
Bachelor's Degree	62	88.6
Master's Degree	8	11.4
<b>Gross Monthly Income</b>		
Php 5,000 – Php 9,999	2	2.9
Php 10,000 – Php 14,999	17	24.3
Php 15,000 – Php 19,999	37	52.9
Php 20,000 – Php 24,999	12	17.1
Php 25,000 – above	2	2.9
<b>Work Status</b>		
Probationary	10	14.3
Regular	60	85.7
<b>Length of Institutional Experience</b>		
6months – 5 years	61	87.1
6 – 10 years	4	5.7
10 – 15 years	2	2.9
Greater than 15 years	3	4.3
<b>Nurse to Patient Ratio</b>		
1 – 5 patients per nurse	5	7.1
6 – 10 patients per nurse	35	50.0
11 – 15 patients per nurse	22	31.4
16 – 20 patients per nurse	6	8.6
More than 20 patients per nurse	2	2.9
<i>Mean Nurse to Patient ratio – 11.30</i>		

## Results

### The socio-demographic profile of the participants

Table 1 depicted the socio-demographic profile of the respondents. The majority of the surveyed were female (75.7%) with a mean age of 31.5 years. Only a small proportion completed a master's degree (11.40%). With regards

to their socioeconomic status, more than half of the respondents were earning a gross salary range from Php 15,000.00 – Php 19,999.00 (52.90%). There was only a small percentage of surveyed participants on probationary status (14.30%), and most

of them were new in the institution with more than six months to five years of institutional work experience (87.10%). In addition, most nurses have 6-10 patients to take care of in a shift (50%) with a mean score of 1 is to 11.30 nurse to patient ratio.

**Table 2.** Mean rating score of the practice work environment scale of staff nurses at Cavite, Philippines

Item No.	Question	Mean	Standard Deviation
<b>Nurse Participation in Hospital Affairs</b>		3.07	.607
5	Career development/clinical ladder opportunity.	3	.761
6	Opportunity for staff nurses to participate in policy decisions.	3.07	.748
11	A chief nursing officer who is highly visible and accessible to staff.	3.41	.712
15	A chief nursing officer equal in power and authority to other top-level hospital executives.	3.2	.693
17	Opportunities for advancement.	3	.817
21	Administration that listens and responds to employee concerns.	2.87	.931
23	Staff nurses are involved in the internal governance of the hospital (e.g., practice and policy committees).	2.97	.780
27	Staff nurses have the opportunity to serve on hospital and nursing committees.	3.09	.717
28	Nursing administrators consult with staff on daily problems and procedures.	3	.799
<b>Nursing Foundations for Quality of Care</b>		3.15	.558
4	Active staff development or continuing education programs for nurses.	3.03	.761
14	High standards of nursing care are expected by the administration.	3.17	.722
18	A clear philosophy of nursing that pervades the patient care environment.	3.19	.666
19	Working with nurses who are clinically competent.	3.36	.566
22	An active quality assurance program.	2.97	.798
25	A preceptor program for newly hired RNs.	2.94	.814
26	Nursing care is based on a nursing, rather than a medical, model.	3.11	.649
29	Written, up-to-date nursing care plans for all patients.	3.24	.624
30	Patient care assignments that foster continuity of care, i.e., the same nurse cares for the patient from one day to the next.	3.2	.753
31	Use of nursing diagnosis	3.26	.695
<b>Nurse Manager Ability, Leadership, and Support of Nurses</b>		3.21	.649
3	A supervisory staff that is supportive of the nurses.	3.27	.760
7	Supervisors use mistakes as learning opportunities, not criticism.	3.16	.828
10	A nurse manager who is a good manager and leader.	3.24	.711
13	Praise and recognition for a job well done.	3.11	.790
20	A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician.	3.24	.806
<b>Staffing and Resource Adequacy</b>		2.95	.665
1	Adequate support services allow me to spend time with my patients.	3.26	.736
8	Enough time and opportunity to discuss patient care problems with other nurses.	3.27	.563
9	Enough registered nurses to provide quality patient care.	2.56	.973
12	Enough staff to get the work done.	2.7	.922
<b>Collegial Nurse-Physician Relations</b>		3.29	.611
2	Physicians and nurses have good working relationships.	3.41	.648
16	A lot of teamwork between nurses and physicians.	3.24	.751
24	Collaboration (joint practice) between nurses and physicians.	3.21	.720
<b>Overall Composite Score</b>		<b>3.13</b>	<b>.570</b>

**Table 3.** Mean rating score of the subjective workload assessment of staff nurses in Cavite, Philippines

Subscale	Mean (Raw) Rating	Standard Deviation
Mental Demand	74.93	16.39
Physical Demand	77.64	15.87
Temporal Demand	69.21	17.17
Performance	54.43	26.55
Frustration Level	75.29	18.84
Effort	56.71	21.65
<b>Overall Workload Score</b>	<b>71.24</b>	<b>12.78</b>

### The Practice Work Environment

Table 2 showed the mean scores of the practice work environment score of individual subscale items and the overall mean score. The individual score items were tabulated to find out where the staff nurses scored high or low. On average, staff nurses were perceived to have a favorable work environment in all the five subscales of practice work environment with an overall composite score of 3.13 ( $SD= 0.570$ ).

The nurses also have a relatively high mean score in most subscales, which suggests that they agree that they have a favorable work environment in terms of the following: nurse participation in hospital affairs ( $M= 3.07$ ,  $SD= 0.607$ ), nursing foundations for quality care ( $M= 3.15$ ,  $SD= 0.558$ ), nurse manager ability, leadership, and support of nurses ( $M= 3.21$ ,  $SD= 0.649$ ), and collegial nurse-physician relations ( $M= 3.29$ ,  $SD= 0.611$ ). On the other hand, the subscale of staffing and resource adequacy ( $M= 2.95$ ,  $SD= 0.665$ ) got the lowest mean score among all the subscales, yet still in a favorable working environment score.

Staff nurses perceived a favorable working environment in the subscale of nurse participation in hospital affairs. With a mean score of 3.41 ( $SD= 0.712$ ), question item 11 "A chief nursing officer who is highly visible and accessible to staff" leads the subscale. Whilst administration that listens and responds to employee concerns ( $M= 2.87$ ,  $SD= 0.931$ ) scores the lowest in the said subscale.

For the subscale of nursing foundations for quality of care, staff nurses perceived this as a favorable working environment. Question items numbers 19 and 31 "Working with nurses who are clinically competent," and "Use of nursing diagnosis" scores the highest with a mean score of 3.36 ( $SD= 0.566$ ), and 3.26 ( $SD= 0.695$ ), respectively. On the other hand, item questions numbers 22 and 25 received a low mean score but within the favorable working environment, these were active quality assurance program ( $M= 2.97$ ,  $SD= 0.798$ ) and a preceptor program for newly hired RNs ( $M= 2.94$ ,  $SD= 0.814$ ).

For the subscale nurse manager ability, leadership, and support of nurses, staff nurses are perceived to have a favorable working environment all over this subscale. A high score was recorded for item "A supervisory staff that is supportive of the nurses" with a mean score of 3.27 ( $SD= 0.760$ ). Surprisingly, "praise and recognition for a job well done" ( $M= 3.11$ ;  $SD= 0.790$ ) ranks the last for this subscale.

For staffing and resource adequacy, staff nurses also perceived a favorable working environment. These were "having enough time and opportunity to discuss patient care problems with other nurses" ( $M= 3.27$ ,  $SD= 0.563$ ), "adequate support services allow me to spend time with my patients" ( $M= 3.26$ ,  $SD= 0.736$ ), and "enough nurses to get the work done" ( $M= 2.70$ ,  $SD= 0.922$ ). While "enough registered nurses to provide quality patient care" ( $M= 2.56$ ,  $SD= 0.973$ ) scores the lowest overall.

In the subscale of collegial nurse-physician relations, staff nurses perceive a favorable working environment in all the items. Score in each item are as follows: physician and nurses have good working relationships ( $M= 3.41$ ,  $SD= 0.648$ ); a lot of teamwork between nurses and physicians ( $M= 3.24$ ,  $SD= 0.751$ ); and, collaboration (joint practice) between nurses and physicians ( $M= 3.21$ ,  $SD= 0.720$ ), respectively.

### The Subjective Workload

Table 3 showed the mean rating score and standard deviation of staff nurses' subjective workload assessment using the NSA-TLX with the task of monitoring and observing patient condition. It was a single task that the staff nurses answered during their shift.

Results of the mean overall workload score is 71.24 ( $SD= 12.78$ ) which showed that, on average, the nurses have a high workload on the task of monitoring and observing patient condition. This further reflected on the mental demand ( $M= 74.93$ ,  $SD= 16.39$ ), physical demand ( $M= 77.64$ ,  $SD= 15.87$ ), temporal demand ( $M= 69.21$ ,  $SD= 17.17$ ), and frustration level ( $M= 75.29$ ,  $SD= 18.84$ ) whose mean ratings fall on high workload level. However, the staff nurses' recorded mean rating scores lowest among the

**Table 4.** Coefficients (*p*-values) of the Chi-square Tests between work environment and socio-demographic profile of staff nurses at Cavite, Philippines

Work Environment (PES-NWI) Subscale	Socio-Demographic profile						
	Age Group	Sex	Educational Attainment	Gross Monthly Income	Work Status	Length of Institutional Experience	Nurse to Patient Ratio
Nurse Participation in Hospital Affairs	29.67 (.884)	27.73 (.116)	21.29 (.380)	83.65 (.368)	14.01 (.830)	63.39 (.358)	97.10 (.094)
Nursing Foundations for Quality of Care	29.53 (.926)	20.91 (.465)	29.54 (.102)	91.60 (.267)	11.65 (.949)	61.00 (.548)	84.68 (.459)
Nurse Manager Ability, Leadership, and Support of Nurses	12.79 (.970)	8.71 (.727)	8.138 (.774)	31.83 (.935)	6.69 (.877)	35.53 (.491)	<b>94.26 (<i>&lt;</i>.001)*</b>
Staffing and Resource Adequacy	18.96 (.648)	6.46 (.841)	10.70 (.469)	34.05 (.860)	8.49 (.668)	31.00 (.567)	<b>75.06 (.002)*</b>
Collegial Nurse-Physician Relations	7.11 (.931)	4.82 (.682)	4.17 (.760)	18.24 (.920)	2.17 (.950)	6.55 (.999)	23.21 (.722)
<b>Overall Composite Score</b>	117.89 (.537)	62.02 (.404)	70.00 (.177)	258.87 (.192)	56.12 (.618)	210.00 (.062)	265.53 (.124)

\**p*-values .05 are considered significant

subscales of effort ( $M = 56.71$ ,  $SD = 21.65$ ) and performance rate ( $M = 54.43$ ,  $SD = 26.55$ ), yet, these were still considered as a high workload. The small standard deviation indicates a small variation of subscale scores between nurses.

#### The relationship between work environment and socio-demographic profile of staff nurses at Cavite, Philippines

Results in table 4 showed there was insufficient evidence to conclude that each demographic profile tested (age group, sex, educational attainment, gross monthly income, work status, length of institutional experience, and nurse to patient ratio) were related to the overall work environment of nurses at 5% level of significance.

A significant relationship was found between Nurse to Patient Ratio and Nurse Manager Ability, Leadership, and Support of Nurses ( $X^2 = 94.26$ ,  $p = <.001$ ) and Staffing and Resource Adequacy ( $X^2 = 75.06$ ,  $p = 0.002$ ). This may mean that the ratio between nurse-to-patient has a significant relationship with the increase/decrease of the presence of the mentioned subscales.

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#### The relationship between workload and demographic profile of staff nurses at Cavite, Philippines

Table 5 showed a significant relationship between the following variable pairings: age and physical demand (*p*-value at .004), length of institutional experience and physical demand (less than .001), performance and educational attainment (.018), educational attainment and effort (.005), and length of institutional experience and effort (.001). This suggested that the nurse's demographics have a significant relationship with the increase/decrease of their workload subscale. This means that the physical demands of nurses may differ according to their age group and length of institutional experience, the performances of nurses change according to their level of educational attainment, and the efforts of nurses vary according to their educational attainment and length of institutional experiences.

**Table 5.** Coefficients (*p*-values) of the Chi-square Tests between workload and socio-demographic profile of staff nurses at Cavite, Philippines

Workload (NASA-TLX) Subscale	Socio-Demographic profile						
	Age Group	Sex	Educational Attainment	Gross Monthly Income	Work Status	Length of Institutional Experience	Nurse to Patient Ratio
Mental Demand	26.04 (.250)	13.05 (.290)	13.62 (.255)	52.27 (.184)	13.05 (.290)	44.95 (.080)	47.80 (.321)
Physical Demand	<b>49.33</b> <b>(.004)*</b>	17.59 (.174)	20.64 (.080)	52.62 (.450)	16.94 (.202)	<b>89.05</b> <b>(&lt;.001)*</b>	52.17 (.468)
Temporal Demand	24.17 (.452)	6.73 (.875)	8.39 (.754)	39.97 (.788)	18.94 (.090)	40.32 (.285)	58.61 (.140)
Performance	42.65 (.147)	15.34 (.571)	<b>31.31</b> <b>(.018)*</b>	78.42 (.182)	18.55 (.355)	51.21 (.465)	77.66 (.198)
Frustration Level	47.72 (.092)	12.74 (.807)	18.23 (.441)	84.61 (.147)	15.50 (.628)	42.83 (.863)	84.31 (.152)
Effort	34.75 (.117)	8.06 (.839)	<b>30.10</b> <b>(.005)*</b>	44.57 (.758)	8.16 (.833)	<b>74.35</b> <b>(.001)*</b>	51.51 (.493)
<b>Overall Workload Score</b>	112.10 (.324)	49.15 (.625)	58.47 (.281)	218.67 (.362)	64.56 (.133)	184.36 (.082)	171.732 (.980)

\**p*-values .05 are considered significant

**Table 6.** Pearson's *r* correlation result between work environment and workload of staff nurses at Cavite, Philippines

Work Environment	Workload Performance						Overall Workload Score
	Mental Demand	Physical Demand	Temporal Demand	Performance	Frustration Level	Effort	
Nurse Participation in Hospital Affairs	-.072 (.556)	-.092 (.446)	<b>-.342</b> <b>(.004)*</b>	-.039 (.752)	.135 (.266)	-.249 (.038)	-.083 (.496)
Nursing Foundations for Quality of Care	-.031 (.797)	-.051 (.674)	-.309 (.009)	-.070 (.564)	.130 (.284)	-.226 (.060)	-.070 (.564)
Nurse Manager Ability, Leadership, and Support of Nurses	-.031 (.797)	-.051 (.677)	<b>-.312</b> <b>(.009)*</b>	.009 (.938)	.146 (.229)	-.178 (.140)	-.035 (.776)
Staffing and Resource Adequacy	-.203 (.091)	-.175 (.147)	<b>-.397</b> <b>(.001)*</b>	-.027 (.822)	.181 (.135)	<b>-.242</b> <b>(.044)*</b>	-.143 (.236)
Collegial Nurse-Physician Relations	.026 (.829)	-.013 (.915)	-.213 (.077)	-.094 (.440)	.075 (.540)	-.104 (.392)	-.051 (.675)
<b>Overall Environment Score</b>	-.070 (.563)	-.085 (.485)	<b>-.342</b> <b>(.004)*</b>	-.046 (.704)	.145 (.230)	-.216 (.072)	-.084 (.491)

\**p*-values .05 are considered significant

### Relationship between work environment and workload of staff nurses at Cavite, Philippines.

Table 6 showed that there was a statistically significant correlation between nurse participation in hospital affairs and staff nurses' temporal demand. The Pearson's *r* correlation (.342) showed a moderate downhill linear relationship between the

nurse participation in hospital affairs and the temporal demand of nurses. An increase of nurses participating in hospital affairs was correlated with a decrease in their temporal demand. This suggested that the more the nurses were involved in hospital affairs, there was lesser time pressure involved in completing the task or vice versa.



Additionally, the temporal demand of nurses had a significant relationship with Nurse Manager Ability, Leadership, and Support of Nurses, Staffing and Resource Adequacy, and the Overall Environment Score. The Pearson's *r* correlations (all < -0.3) showed a negative linear relationship between the temporal demand and the variables. This meant that increases in those variables are correlated with decreases in temporal demand.

Finally, the effort of nurses has a significant relationship with staffing and resource adequacy. The Pearson's *r* correlation (-.242) showed a weak downhill linear relationship between staffing and resource sufficiency and staff nurses' effort. Increases in staffing and resource were correlated with decreased effort. This suggested that the more staff and resources available, there was less amount of effort to be given by the nurses or vice versa.

## Discussion

Nurses are perceived to have the highest subscale score of practice work environment in collegial nurse-physician relations while lowest in staffing and resource adequacy. This may indicate that the nurses have a good working relation, teamwork, and collaboration among their co-healthcare team which is the physician. Before, there were professional cultural norms that separate the nursing and medicine practice. These differences made it difficult to collaborate among the said discipline. But as time changes, the cultural norms shifted to collaborative promotion of quality care with their patients. The result of the study reflected the observation seen among staff nurses within their co-healthcare team, the physician, as having been collegial with each other. Physicians need to establish rapport with the nurses to create an easier and more comfortable interprofessional collaboration affecting patient care. In the study by Lindeke, L., and Sieckert, A. (2005), enhancing nurse-physician collaboration has the potential to improve patient care and create rewarding work roles, and the need for nurses and physicians to re-establish their common purpose and motivation is more critical than ever.

However, a low subscale score was seen in staffing and resource adequacy. As a result of this circumstance, staff nurses may be required to work overtime or double shifts and float on other wards, and staff nurses may be unable to manage their work adequately due to insufficient staff to complete required documentation and paperwork while delivering care to patients.

Nurse staffing has been a long-standing problem. The World Health Organization (2009) recommended skill-mix nursing staffing of 1:4 -5 patients in medical-surgical units, rehabilitation units and general wards, 1:1 patient in the operating rooms, and 1:1 patient in the critical nursing units. On the contrary, the guidelines set by the Philippine's Department of Health had 1:12 nurse-to-patient ratio in general wards and 1:4 ratio in critical units.

In terms of the workload, staff nurses at Cavite, Philippines perceived a high workload demand in dealing with observing and

monitoring patient conditions. Nurses' jobs entailed physically-demanding or strenuous activities to finish the tasks. While the respondents may perceive that they are highly performing their tasks, results proved that nurses were performing the task better inspite of having higher physical workload. Upon observation, staff nurses work diligently to attend to patients who needed their care most. When shortcomings arise because of non-nursing tasks being accomplished, other members of the healthcare team, nurse managers, and nurse supervisors help the staff nurses when the needs arise. Because of this, unique Filipino characteristics such as being quick learners, lifting patients' moods, being versatile in not saying no, and being compassionate, surface (INSCOL, 2016).

Among all the measured variables of socio-demographic characteristics of staff nurses in Cavite, Philippines, only the nurse-to-patient ratio affects the work environment of nurses in specific subscales as stated. There was an average of 11.30 nurse to patient ratio and may exceed if in-patient cases surge. Nurses will work on extended hours or shifts to compensate for work demands, such as in the issue of absent staff. Nurse leaders' characteristics, such as their abilities, leadership styles, support, and adequate resources and staffing may influence staff nurses' absenteeism and resignation. Thus, this can greatly affect nurse-to-patient ratio. Likewise, age, length of institutional experience, and educational attainment have relationships with the workload of staff nurses. Most respondents were young and new in the service and finished baccalaureate degrees. Nursing is a physically demanding job as the nurses need to constantly monitor patients from the bedside and document the findings in medical records. The younger the nurse, the expectation of doing greater things was way beyond those who are aging. On the other hand, nurses who are new in the service were most likely to experience high physical demand and put a higher effort in doing their job as they were adjusting to their current work conditions. Education and knowledge-based experiences influence their performances leading to putting higher efforts towards their job. The study undertook by Duffield, C., et. al. (2010), which attempted to identify the link between nursing staffing, nursing workload, the work environment, and patient outcomes, may become an eyeopener. The findings reveal an interpretable pattern in workload and work environment variables. Care declined in areas where nurses reported a hazardous workplace, where there is insufficient leadership and ancillary staff, and when there is an inadequate number of adept staff nurses.

## Limitation of the Study

This study focused on staff nurses working in general nursing units or wards at private level 2 hospitals in Cavite, Philippines, to learn more about their working environment and workload. It was not intended to measure the work performance and competence of staff nurses. Rather, it measures the relationship between the working environment and workload using the Practice Work Environment scale and NASA-Task Load Index.

Participants of the study do not focus on the administrative and other domains of nursing fields, such as education, community, primary health care, etc. and with other hospital units, such as intensive care units, operating rooms, and other specialty units except those who were in a ward unit of either general or specific ward unit such as medical, surgical, pediatric, obstetrics, trauma, among others.

This study was also limited in assessing the subjective or perceived workload of staff nurses based on the task of monitoring and observing patient's condition, and not on their physiological aspect affecting the workload such as measuring vital signs, taking electrocardiograph, doing some laboratory or other diagnostic test and the like.

### Conclusions

In this study, staff nurses in level 2 hospitals at Cavite, Philippines were mostly female, belonged to Generation Y (23-38 years old) or the Millennials, had baccalaureate degree in Nursing, more than half reported to have a gross monthly salary of Php 15,000.00-19,999.00, less than a quarter were employed in the institution from more than 6 months to 5 years, and have an average nurse to patient ratio of 1 is to 11.30.

Nurses in this study had a favorable working environment in all subscales despite their perceived high workload in terms of the six subscales (mental demand, physical demand, temporal demand, performance, effort, and frustration) in the task of monitoring and observing patient conditions. Lastly, there is no significant correlation between work environment and workload.

Likewise, in the work environment subscale variables of nurse management competency, leadership, as well as staffing and resource sufficiency, the nurse-to-patient ratio is found to be significant.

Furthermore, age and length of institutional experience influence nurses' physical demands, educational attainment influences nurses' workload of nurses in terms of performance and effort, and length of institutional experience influences nurses' workload in terms of the subscale of effort.

Moreover, nurse participation in hospital affairs, nurse management competency, leadership, and support of nurses, staffing and resource adequacy, and the overall work environment score all demonstrated significant relationships with the workload subscale of temporal demand. Also, staffing and resource adequacy had a substantial impact on staff nursing efforts.

Finally, the results indicate the importance of measures aimed at enhancing the work environment and workload of staff nurses in a manner to prevent further challenges among staff nurses, and that certain recommendation is being suggested by the researcher.

### Recommendations

Despite their high reported workload, the study's findings revealed that staff nurses' working environment is favorable. The following suggestions were made as a result of this.

The first is for the improvement of staffing-related concerns. In this study, the nurse-to-patient ratio was found to have a significant relationship with the work environment of nurses. The hiring of nursing personnel should be prioritized to fill in the gaps of the inadequacy of manpower that the current workforce is handling. Besides hiring nurses to fill the gap in the nurse-to-patient ratio, an adequate staff skills mix should be observed and included in the policies and procedures of the nursing department. This includes but is not limited to have a patient acuity care system in the staffing of nursing personnel.

The second is for the improvement of nurse manager's ability, leadership, and support for nurses. It is recommended that the leader, administrator, or manager of the institution should have adequate time in meeting the needs of employees or their nurses to address certain issues, topics, or concerns. They must be able to engage in assertive dialog that separates facts from feelings, clarifies the central issues, and identifies differing viewpoints. There must be a need to listen and seek a collaborative solution that balances power and satisfies both parties.

The third argument is that the burden of staff nurses should be reduced. Age, educational background, and duration of institutional experience all have an impact on workload, according to statistical analysis. The work environment subscale of nurse participation in hospital affairs, nurse manager ability, leadership, and support of nurses, staffing and resource adequacy, and the overall work environment score are all affected by temporal demand or the time pressure that the staff nurses felt due to the pacing of tasks. Staff nurses' effort or the accomplishment of a certain level of performance during the task affects their subscale of work environment staffing and resource adequacy. With this, having a concrete program plan that addresses the affected variable would be beneficial. This includes but is not limited to formulating policies or guidelines concerning the development of personnel, career mapping, and succession planning. As soon as the personnel is hired in the institution, he/she must be continuously helped out to develop their skills and abilities. As part of the orientation program, the subject of personnel development, career mapping, and succession planning be discussed with them. For staff development, administrators and managers should have a continuous mentorship and preceptorship program such as having post-graduate training or workshops to hone their skills. In terms of career mapping, there must be an individualized developmental plan by identifying the staff behavior to be enhanced, describing developmental activities, and specifying what is to be done by whom and when. There must be an interim review and coaching log to monitor individual progress. For

succession planning, on the other hand, focuses on identifying potential employees with leadership potentials for the benefit of the organization or institution. Many nursing units may suffer due to the resignation of some position nursing personnel, herewith, succession planning must take place beforehand to avoid problems caused by inappropriate or unacceptance of the personnel as a replacement. A leadership and management training for all personnel would be beneficial in creating a potential leader.

The last point is to have further research be done along with the work environment and workload of staff nurses. This study is an overview of the work environment and workload of nurses and does not evaluate the effect that could include patient satisfaction with communication, timeliness of care, and clinical outcomes with regards to staff nurses' work environment and workload. It focuses among the ward or nursing units of private level 2 hospitals in the province of Cavite, Philippines, and this may not view the overall work environment and workload of the Philippines. Limited related literature was available in Philippine settings and duplication or having the study conducted in a different setting such as the other domains of hospital nursing is also recommended.

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