

ORIGINAL ARTICLES

## Quality of periodic health examination service for employees and associated factors at the New Port Medical Center, Ho Chi Minh city in 2020

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### ABSTRACT

**Objectives:** A periodic health examination helps people to evaluate the overall health status, so it is of the utmost importance to each individual, including employees. At Saigon Newport Corporation, employees have to do strenuous, hazardous, and dangerous works, so periodic health examination is necessary.

**Methods:** A descriptive cross-sectional study was conducted on 436 employees to measure their perception of the periodic health examination service quality via the SERVPERF scale and associated factors at the New Port Medical Center, Ho Chi Minh City, 2020.

**Results:** Research results indicated that 78% of employees have a good assessment of the quality of periodic health examination, in which reliability was 79.6%, assurance was 79.8%, which were also the least.

**Conclusions:** Gender, level of education, and sector of employment were related to the employees' perception of the periodic health examination service.

**Keywords:** Periodic health examination, employee, SERVPERF, New Port Medical Center, Saigon Newport Corporation.

### INTRODUCTION

Not only does periodic health examination allow healthcare workers to detect and get timely treatment for acute diseases, chronic diseases, and malignant diseases, but it also helps managerial staff to arrange appropriate jobs to limit occupational diseases for employees (1). Notwithstanding the fact that periodic health examination is of the utmost importance to each individual, this have not been given due consideration in Vietnam yet. According to previous research, the proportion of people having demand for periodic

health examination was quite remarkable (approximately 75%), yet just about 20 to 22% of the study subjects got periodic health examination for screening, maintaining, and protecting health (2), (3). The study subjects explained that periodic health examination is not necessary (constituting 31.8%). Also, the time for examination and procedure is not convenient for them (about 40%) (3).

In the working environment, periodic health examination is mandatory annually to assess the overall health status and screen for occupational diseases for employees. At

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Saigon Newport Corporation, employees have to do strenuous, hazardous and dangerous work, so periodic health examination towards employees plays a more vital role. The procedure and contents of periodic health examination have been updated by New Port Medical Center on a regular basis, which is following the disease model for the employees individually and people as a whole in Vietnam. Although the examination contents are greatly appreciated for expertise from healthcare professionals at the front-line hospitals, some employees claim that the periodic health examination at the medical center is not high-quality enough to cater to their demands. Furthermore, in spite of the fact that there have no research on the quality of periodic health examination service, a range of studies on the quality of medical examination and treatment service evaluation illustrate that patients have not highly appreciated the service of public health care, especially primary health care units (4), (5).

To assess employees' perception of the periodic health examination service and examine factors related to the employees' perception, we conduct the study "**Quality of periodic health examination service for employees and associated factors at the New Port medical center, Ho Chi Minh city in 2020**" to gain a scientific basis in the improvement of quality of periodic health examination service in the future.

## MATERIALS AND METHODS

### Study design

A descriptive cross-sectional study was conducted to assess employees' perception of the periodic health examination service.

### Study site and duration

The study was conducted from November 2019 to July 2020 at the New Port Medical Center, Ho Chi Minh City, Vietnam.

### Study subjects

The study included employees who got the periodic health examination procedure at the New Port Medical Center, Ho Chi Minh City, 2020.

Employees who are on a business trip, on the maternity leave, on furlough, or on sick leave during the study period will be excluded from the study.

### Sample size and sampling technique

The minimum sample size of the study was calculated with the formula of ratio estimation:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

In which

+ n is a minimum sample size.

+  $Z^2_{(1-\alpha/2)}$  is a test of statistical significance, with  $\alpha=0,05$  and  $Z=1.96$ , correspondingly.

+ p is an estimated outcome ratio, selected  $p\text{-value}=0.5$ , since there have no previous studies on evaluating the quality of periodic health examination, and to ensure the largest sample size as well.

+ d is an absolute precision, with  $d=0.05$ .

After the calculation, the minimum sample size was 385 employees. Researchers have scheduled that 10% of the total collection form was unsatisfactory, so the required sample size was 428 employees. 436 employees were participating in this research through stratification by gender. On each day, the researcher would use the

lottery method to randomly select employees to participate in the study until reaching an adequate sample size.

### **Variables and measurement**

This study used a self-administered questionnaire, which includes demographic characteristics such as age, gender, level of education, sector of employment, workplace, and status of living with a spouse. In addition, the variables measuring the quality of service according to the SERVPERF model, which includes 22 item statements in 5 dimensions, including

- 1) The reliability of periodic health examination service;
- 2) The responsiveness of healthcare workers;
- 3) The assurance ability of the New Port Medical Center;
- 4) The healthcare workers' empathy towards the employees;
- 5) Tangible facilities, infrastructure, and clothing of health workers.

Each item statement is measured on a 5-point Likert scale, ranging from level 1 which is indicated strongly disagree; 2 for disagree; 3 for neither disagree nor agree; 4 for agree and 5 for strongly agree.

### **Study instruments and data collection**

A self-administered questionnaire was provided to the employees for data collection. The duration of data collection was 30 days, with 20 female and 30 male employees participating in the survey on a daily basis after completing the periodic health examination at the New Port Medical Center. Before they

partook in the study, they were thoroughly explained about the objectives and research-related content. The study data were completely kept confidential and solely used for study purposes. Afterward, participants were asked to sign a consent form to participate in the study before answering the questionnaire.

### **Data processing and analysis**

Data collected in this study were entered into Epidata 3.1 software and statistical analyses were performed using STATA version 15.1. The age of study subjects was divided into 2 groups, including less than 37 years of age and 37 years of age and older because the mean age of employees was 37.6 years of age and the median age was 36 years of age. The quality of service was assessed as "good quality" when employees rated "Agree" or "Strongly agree". The quality of service was assessed as "not of good quality" or "poor quality" when employees rated "Disagree" or "Strongly disagree" or "Neither disagree nor agree". The relationship between demographic characteristics and the employees' assessment of the quality of the periodic health examination service was measured by the odds ratio (OR).

### **Ethical clearance**

This study was approved by the ethics committee of Hanoi University of Public Health in accordance with decision No. 97/YTCC – HD3 signed on March 12<sup>th</sup>, 2020, and approved by the unit leaders prior to implementation.

## **RESULTS**

### **Demographic characteristics of study subjects**

**Table 1. Demographic characteristics of employees (n=436)**

<b>Characteristic</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Gender</b>		
Male	353	81.0
Female	83	19.0
<b>Age group</b>		
Less than 37 years of age	225	51.6
37 years of age and older	211	48.4
<b>Status of living with a spouse</b>		
Yes	339	77.8
No	97	22.2
<b>Level of education</b>		
High school, intermediate	208	47.7
College, university	228	52.3
<b>Sector of employment</b>		
Office work	145	33.3
Field work	291	66.7

Study participants' age was varied, ranging from 22 to 60 years of age with a mean age of 37.6 years. Table 1 depicts that employees in the study shared a similar level of education since most of them work in the field such as shore transportation (driving, crane driving), maritime transport (marine pilot, ship driver), national defense (on sea duty), other fields (warehousing, operations, field coordinator). Therefore,

the vast majority of participants in this study were men.

A greater number of employees were married currently and lived with their spouse; however, some employees were married but did not live with their spouses or unmarried.

**Assessment of the periodic health examination service quality at the New Port medical center, Ho Chi Minh City, 2020**

**Table 2. Good assessment of the periodic health examination service quality from the employees (n=436)**

Item statement	Frequency	Percentage
<b>Reliability</b>		
Diagnosis results	361	82.8
Treatment methods	352	80.7
Provision of information from healthcare workers	375	86.0
Trust in being health monitoring after examination	369	84.6
When healthcare workers promise to do something by a certain time, they follow their promise	388	89.0
<b><i>Overall feeling towards reliability</i></b>	<b>347</b>	<b>79.6</b>
<b>Responsiveness</b>		
The healthcare workers fulfill legitimate demands	392	89.9
The healthcare workers guide and help with related administration procedures	397	91.1
The healthcare workers are willing to explain and advise	370	84.9
Appropriate waiting time	334	76.6
<b><i>Overall feeling towards responsiveness</i></b>	<b>363</b>	<b>83.3</b>
<b>Assurance</b>		
The healthcare workers have professional knowledge	343	78.7
The healthcare workers have practical skills	350	80.3
The healthcare workers implement professional procedures and related formalities	380	87.2
The healthcare workers always have an attitude	374	85.8
<b><i>Overall feeling towards assurance</i></b>	<b>348</b>	<b>79.8</b>
<b>Empathy</b>		
The healthcare workers show a sincere interest during the examination process	386	88.5
The healthcare workers empathize and share about anxiety	377	86.5
The healthcare workers understand and sympathize with the waiting time	353	81.0
The healthcare workers are courteous	382	87.6
Appropriate periodic health examination procedures	368	84.4
<b><i>Overall feeling towards empathy</i></b>	<b>366</b>	<b>83.9</b>
<b>Tangible</b>		
Clothing of healthcare workers	429	98.4
Medical machines and equipment	412	94.5
Periodic health examination site	351	80.5
The medical result rooms ensure privacy	373	85.5
<b><i>Overall feeling towards tangible</i></b>	<b>368</b>	<b>84.4</b>
<b><i>Overall feeling towards periodic health examination service</i></b>	<b>340</b>	<b>78.0</b>

Table 2 shows the employees' perceptions of the periodic health examination service quality at the New Port Medical Center through 22 item statements and 5 dimensions of the SERVPERF scale. The results indicated that the employees' good assessment of periodic health examination was 78.0%, in which the employees' assessment on all dimensions of the SERVPERF scale

shared nearly equal proportions. Most employees assessed healthcare workers' clothing as appropriate and professional. The medical machines and equipment were up-to-date and comfortable. Additionally, the waiting time for clinical and subclinical examination was assessed as the most low-quality component by employees (accounting for 23.4%).

**Table 3. Quality of periodic health examination services by gender**

	Good quality n (%)	Poor quality n (%)
Male	296 (83.8)	57 (16.2)
Female	44 (53.0)	39 (47.0)

Research results when stratifying study subjects by gender in Table 3 offer insights into that among employees who had good-quality periodic health examination assessment, the portion of male employees was higher than female employees. Besides, female employees who had good-quality and

poor-quality periodic health examination assessments were almost equal.

**Analysis of factors associated with employees' perceptions of the periodic health examination service quality at the New Port medical center, Ho Chi Minh City, 2020**

**Table 4. Relationship between demographic characteristics and the employees' assessment of the quality of periodic health examination service (n=436)**

Characteristic	Quality of service		OR (CI)
	Poor (n)	Good (n)	
<b>Age group</b>			
Less than 37 years	55	170	1.34 (0.83 – 2.18)
37 years and older	41	170	
<b>Gender</b>			
Female	39	44	4.60 (2.65 – 7.95)
Male	57	296	
<b>Status of living with a spouse</b>			
Yes	74	265	0.95 (0.54 – 1.72)
No	22	75	
<b>Level of education</b>			
High school, intermediate	66	162	2.42 (1.46 – 4.06)
College, university	30	178	

Characteristic	Quality of service		OR (CI)
	Poor (n)	Good (n)	
<b>Sector of employment</b>			
Office work	41	104	<b>1.69 (1.03 – 2.76)</b>
Field work	55	236	
<b>Workplace</b>			
Ho Chi Minh City	70	209	1.69 (1.00 – 2.90)
Other	26	131	

There were statistically significant correlations between gender, level of education, sector of employment, and the employees' assessment of the quality of periodic health examination service at the New Port medical center.

In this study, the proportion of female employees who had poor-quality periodic health examination assessment was 4.06 times as large as that of male employees (95% CI 2.65 - 7.95).

Regarding the level of education, employees who completed college and university were 2.42 times more likely to have poor-quality periodic health examination assessment than people who completed high school and intermediate (95% CI 1.46 - 4.06).

Moreover, employees who work in the field had 1.69 times better quality periodic health examinations than employees who work in the office (95% CI 1.03 - 2.76).

## DISCUSSION

The employees' assessment of periodic health examination service's dimensions was almost equal (approximately 80%). The DIMENSIONS of reliability and assurance were not assessed as good-quality (making up 79.6% and 79.8%, respectively). There was a huge difference between these results and those of Vo Tran Xuan Dao's study (2019) and Tran Ha Diem's

study (2019) in medical examination and treatment activities when more than 95% of patients evaluate as good-quality in these dimensions (6), (7). The remaining dimensions of Newport medical center were also assessed as good-quality by employees (accounting for 83.3-84.4%). The tangible facilities were best assessed by employees because they perceived the medical machines and equipment at the medical center were up-to-date and the campus for periodic health examination was still narrow. Nevertheless, the study subjects opined that this was compatible with the existing conditions of Newport medical center. This result is consistent with the study of Eduardo Vázquez-Cruz (2018) and Pathak Paridhi (2017), in which tangible facilities were more likely to be highly evaluated among dimensions (8), (9). In Vietnam, this evaluation is appropriate to frontline medical units, yet medical centers or primary hospital units, tangible amenities and facilities are assessed as the most low-quality dimension (10), (5). The overall study results showed that 78% of employees had a good-quality periodic health examination assessment, in which a larger number of male employees had a good assessment than the women.

There were statistically significant correlations between gender, level of education, sector of employment, and the employees' assessment of the quality of periodic health examination

service. A systematic review found that women were more likely to engage in periodic health examination services than men, with a frequency of at least 60-65% (11). Regarding gender, research showed that female employees had a poor assessment of service quality higher than the male when taking up periodic health examinations at the unit. There was a discrepancy in the assessment of service quality by gender between the domain of employee health screening and medical examination and treatment service. Some authors' studies illustrated that female patients had an overall satisfaction rate towards medical examination and treatment service higher than that of male patients and this difference was statistically significant (4), (8).

Employees who completed college or university had a poor assessment of service quality higher than those who only completed high school and intermediate. Simultaneously, employees who work in the office had a poor assessment of service quality higher than the employees who work in the field. This result is similar to the study of author Eduardo Vázquez-Cruz (2018) when stating patients who only completed secondary had a 75% better assessment of service quality compared to other patients (8). This can be explained by the fact that employees who have a higher level of education tend to work in the office, they gain more chances to expose to science – technology, and advanced services. As a result, their demands for health protection and the required quality of periodic health examination services are higher than others. This result is consistent with the study of author Tran Ha Diem when concluding that patients who work in the office have a poor assessment of service quality higher than those who work in other disciplines (6). Nonetheless, this study differs greatly from the studies at Tan Phu District Hospital and Cu Chi general hospitals (2018). Previous research

has illustrated that patients who are intellectual laborers had a higher overall satisfaction rate towards the outpatient services than other groups (4). This distinction is due to the fact that intellectual laborers comprehend the difficulties and pressure that healthcare workers have been facing. Therefore, they have higher acceptance and satisfaction towards provided services. At the same time, the difference in some study subjects' characteristics like age and comorbidities causes a change in the assessment of service quality.

This study using the SERVPERF scale includes five dimensions to assess the employees' perceptions of the periodic health examination service quality at Saigon Newport Corporation. SERVPERF scale has been employed in many studies around the world and Vietnam with high reliability. Besides, the questionnaire was designed with 06 additional questions to assess the employees' overall perception of each dimension surveyed. From then, it will limit the errors of statistical reasoning.

This study has some limitations when it has not compared periodic health examination and service quality among workforce management units. Apart from that, the study has not evaluated the difference in the perception of service quality between employees with and without health problems, so this confounding factor has not also been controlled. We suggest that future studies should consider the usage of sick employees factor to pair sampling and compare to control confounding variables.

## CONCLUSIONS

The rate of employees who had a good-quality periodic health examination assessment was relatively high. The employees' gender, level

of education, and employment sector were related to their perceptions of the quality of periodic health examination. To improve the employees' perceptions of the quality of periodic health examination, Newport medical center has to continue to keep up the good activities, especially post-examination health management.

The Newport Medical Center should adjust the process, promote the utilization of information technology in the medical registration and provide the instructions on the examination procedure to improve the waiting time at reception as well as waiting time at other steps of the periodic health examination procedure. It is recommended that healthcare workers who work at the Newport Medical Center be trained to improve their professional knowledge, so that the quality of periodic health examination would be enhanced, in addition to employees' confidence reinforcement towards the periodic health examination.

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