# Analyzing Emotional Exhaustion from Viewpoints of Physicians and Nurses – A Case of a Regional Teaching Hospital

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***Abstract* – This study uses independent sample t test for mean differences and analysis of variance to observe if physicians and nurses with different demographic variables from a regional teaching hospital in Taiwan perceive differently emotional exhaustion in terms of nine questions from the 2014 internal surveyed data based on the Chinese version of safety attitudes questionnaire. The results show that supervisor/manager, job position, age, experience in organization, and experience in position are more critically important variables in emotional exhaustion. Moreover, hard work and working with people all day and directly are particularly important in emotional exhaustion followed by fatigue and emotional drain.**

***Keywords* – Emotional exhaustion, Safety attitudes questionnaire, Analysis of variance, Bonferroni.**

## 1. Introduction

Shanafelt [1] pointed out that burnout is defined as losing enthusiasm for work, treating people as if they were objects, and having sense that the work is no longer meaningful. That is, the characteristics of burnout are emotional exhaustion, depersonalization, and low personal accomplishment. In addition, burnout is a pervasive problem for physicians [1]. Shanafelt et al. [2] further stated that physicians' overwork, stress, and fatigue are contributing factors to medical errors. Their study showed that medical errors are strongly related to physicians' degree of burnout and mental quality of life. Cimiotti et al. [3] summarized that nurse burnout is linked to job dissatisfaction and patient healthcare quality. An increase in a nurse's workload might result in higher infections due to nurse burnout.

Maslach burnout inventory-human services survey (MBI-HSS) with three dimensions along with 22 questions is the mainstream measure to evaluate burnout [4]. For instance, Lee et al. [5] used a Chinese version of MBI-HSS to assess burnout for nurses in Taiwan. Loera et al. [4] also applied MBI-HSS to assess burnout for Italian nurses. In Taiwan, in order to evaluate burnout, Taiwan Joint Commission on Hospital Accreditation has incorporated nine questions from emotional exhaustion of MBI-HSS into the Chinese version of safety attitudes questionnaire (SAQ) originally developed by Sexton et al. [6] since 2014. The purpose of this modified SAQ is to assess the patient safety culture from the entire staff's perceptions for each healthcare organization in Taiwan on a yearly basis.

Lee et al. [7] stated that the core staffs in each healthcare organization are physicians and nurses. Thus, it would be of interest to observe the attitudes from physicians and nurses toward burnout, which focuses solely on emotional exhaustion. Because physicians and nurses have different demographic information such as gender, age, supervisor/manager, job position, job status, experience in organization, experience in position, education, and direct patient

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contact, it is also worth to analyze and observe how physicians and nurses perceived in emotional exhaustion with different demographic information perceive in terms of emotional exhaustion. Therefore, this study applies analysis of variance (ANOVA) to observe how different demographic information influences emotional exhaustion of MBI-HSS.

## 2. Literature review

MBI-HSS has three dimensions including emotional exhaustion with nine questions, personal accomplishment with eight questions, and depersonalization with five questions [5]. In the newest Chinese version of SAQ, only emotional exhaustion is included to evaluate the entire staff's perceptions in burnout. The detailed information of emotional exhaustion of MBI-HSS is provided in Table 1.

*Table 1.Nine items in emotional exhaustion of MBI-HSS*

| Dimension | Question |
|---|---|
| Emotional Exhaustion | 20. I feel like I'm at the end of my rope.<br>22. I feel burned out from my work.<br>23. I feel frustrated by my job.<br>24. I feel I'm working too hard on my job.<br>35. I feel emotionally drained from my work.<br>36. I feel used up at the end of the workday.<br>37. I feel fatigued when I get up in the morning and have to face another day on the job.<br>38. Working with people all day is really a strain for me.<br>39. Working with people directly puts too much stress on me. |

Each staff is required to answer each question in emotional exhaustion based on a five-point Likert scale ranging from strongly agree to strongly disagree. In addition, all questions in emotional exhaustion are reversed questions such that each respondent's answer is adjusted. For instance, the original answer of strongly agree in Item 20 (I feel like I'm at the end of my rope.) indicates the poor perception of emotional exhaustion. Under such circumstances, the adjustment is to use numerical value of one instead of the numerical value of five if the original answer is strongly agree. By the same token, the answers from the other items are also adjusted.

## 3. Research method

The purpose of this study is to observe how physicians and nurses with different demographic information from a regional teaching hospital in Taiwan perceive emotional exhaustion of MBI-HSS based on the Chinese version of SAQ internal survey results conducted by this case hospital in 2014. By removing incomplete questionnaires, the number of effective questionnaires is 437. The demographic variables in terms of gender, age, supervisor/manager, job position, job status, experience in organization, and experience in position, education, and direct patient contact are depicted in Table 2.

*Table 2.Demographic information of this regional teaching hospital*

| Demographic Variable | | Frequency | Percentage |
|---|---|---|---|
| Gender | 1. Male | 55 | 12.6 |
| | 2. Female | 382 | 87.4 |
| Age | 1. Less than 20 years old | 9 | 2.1 |
| | 2. 21-30 years old | 168 | 38.4 |
| | 3. 31-40 years old | 163 | 37.3 |
| | 4. 41-50 years old | 80 | 18.3 |
| | 5. 51-60 years old | 17 | 3.9 |
| | 6. 61 years old and above | 0 | 0.0 |
| Supervisor/ Manager | 1. Yes | 44 | 10.0 |
| | 2. No | 393 | 90.0 |
| Job Position | 1. Physician | 48 | 11.0 |
| | 2. Nurse | 389 | 89.0 |
| Job Status | 1. Full Time | 387 | 88.6 |
| | 2. Part Time | 22 | 5.0 |
| | 3. Agency | 8 | 1.8 |
| | 4. Contract | 20 | 4.6 |
| Experience in Organization | 1. Less than 6 months | 48 | 11.0 |
| | 2. 6 to 11 months | 18 | 4.1 |
| | 3. 1 to 2 years | 74 | 16.9 |
| | 4. 3 to 4 years | 73 | 16.7 |
| | 5. 5 to 10 years | 101 | 23.1 |
| | 6. 11 to 20 years | 112 | 25.6 |
| | 7. 21 years and more | 11 | 2.5 |
| Experience in Position | 1. Less than 6 months | 64 | 14.6 |
| | 2. 6 to 11 months | 20 | 4.6 |
| | 3. 1 to 2 years | 74 | 16.9 |
| | 4. 3 to 4 years | 77 | 17.6 |
| | 5. 5 to 10 years | 110 | 25.2 |
| | 6. 11 to 20 years | 89 | 20.4 |
| | 7. 21 years and more | 3 | 0.7 |
| Education | 1. Senior High School | 4 | 0.9 |
| | 2. College/University | 404 | 92.4 |
| | 3. Graduate School | 29 | 6.6 |
| Direct Patient Contact | 1. No | 8 | 1.8 |
| | 2. Rare | 26 | 5.9 |
| | 3. Very Often | 403 | 92.2 |

To analyze if different demographic variables impact emotional exhaustion from an overall viewpoint, independent sample t-test for mean differences and one-way analysis ofvariance with $\alpha$= 0.05 are applied to nine questions. The scale for each

question in emotional exhaustion ranges from one to five. If the *p*-value is less than $\alpha = 0.05$, Bonferroni method is used for post hoc analysis except for gender, supervisor/manager, and job position with only two levels. The reason why Bonferroni method is selected is that Bonferroni method reduces the probability of a Type I error that outperforms Scheffe method [8].

## 4. Research method

Independent sample t test for mean differences is applied to test whether or not different gender, supervisor/manager, or job position perceives differently in emotional exhaustion. Males and females do not perceive emotional exhaustion differently as shown in Table 3. From Table 4., Items 24, 38, and 39 are statistically different for supervisor/manager. Specifically, employees who are in charge have significantly higher perception in Items 38 and 39, while employees who are not supervisor/manager have higher perception in Item 24 statistically. That is, employees who are in charge are more comfortable to work with people but tend to work much harder. Physicians and nurses also have different perceptions in Items 35 and 37 statistically as shown in Table 5. Physicians perceive higher satisfaction than nurses in both items. Therefore, physicians feel less stress to work with people. It is worth to note that employees who are supervisors/managers feel less burnout if equal variance assumption holds. If not, there is no significant difference in burnout for different job positions.

*Table 3.Mean differences on emotional exhaustion for gender*

| Question | Assumption | t | Sig. | Post Hoc |
|---|---|---|---|---|
| 20 | Equal Variance | -0.038 | .970 | |
| | Unequal Variance | -0.037 | .971 | |
| 22 | Equal Variance | 1.034 | .302 | |
| | Unequal Variance | 0.912 | .365 | |
| 23 | Equal Variance | 1.328 | .185 | |
| | Unequal Variance | 1.203 | .233 | |
| 24 | Equal Variance | 0.327 | .744 | |
| | Unequal Variance | 0.304 | .762 | |
| 35 | Equal Variance | 1.316 | .189 | |
| | Unequal Variance | 1.211 | .230 | |
| 36 | Equal Variance | 0.416 | .678 | |
| | Unequal Variance | 0.439 | .662 | |
| 37 | Equal Variance | 1.315 | .189 | |
| | Unequal Variance | 1.212 | .230 | |
| 38 | Equal Variance | 0.176 | .861 | |
| | Unequal Variance | 0.172 | .864 | |
| 39 | Equal Variance | 0.634 | .526 | |
| | Unequal Variance | 0.593 | .555 | |

*Table 4.Mean differences on emotional exhaustion for supervisor/manager*

| Question | Assumption | t | Sig. | Post Hoc |
|---|---|---|---|---|
| 20 | Equal Variance | 1.286 | .199 | |
| | Unequal Variance | 1.030 | .308 | |
| 22 | Equal Variance | 0.616 | .538 | |
| | Unequal Variance | 0.522 | .604 | |
| 23 | Equal Variance | 0.721 | .471 | |
| | Unequal Variance | 0.626 | .534 | |
| 24 | Equal Variance | -2.706 | .007 | 2 > 1 |
| | Unequal Variance | -2.462 | .017 | |
| 35 | Equal Variance | -0.053 | .958 | |
| | Unequal Variance | -0.047 | .963 | |
| 36 | Equal Variance | 0.491 | .624 | |
| | Unequal Variance | 0.501 | .618 | |
| 37 | Equal Variance | 0.848 | .397 | |
| | Unequal Variance | 0.745 | .460 | |
| 38 | Equal Variance | 2.369 | .018 | 1 > 2 |
| | Unequal Variance | 2.099 | .041 | |
| 39 | Equal Variance | 3.364 | .001 | 1 > 2 |
| | Unequal Variance | 2.945 | .005 | |

*Table 5.Mean differences on emotional exhaustion for job position*

| Question | Assumption | t | Sig. | Post Hoc |
|---|---|---|---|---|
| 20 | Equal Variance | .758 | .449 | |
| | Unequal Variance | .790 | .433 | |
| 22 | Equal Variance | 1.988 | .047 | |
| | Unequal Variance | 1.745 | .087 | |
| 23 | Equal Variance | 1.819 | .070 | |
| | Unequal Variance | 1.673 | .100 | |
| 24 | Equal Variance | 0.942 | .347 | |
| | Unequal Variance | 0.789 | .434 | |
| 35 | Equal Variance | 2.243 | .025 | 1 > 2 |
| | Unequal Variance | 2.066 | .043 | |
| 36 | Equal Variance | 1.389 | .166 | |
| | Unequal Variance | 1.392 | .169 | |
| 37 | Equal Variance | 2.733 | .007 | 1 > 2 |
| | Unequal Variance | 2.524 | .014 | |
| 38 | Equal Variance | 1.218 | .224 | |
| | Unequal Variance | 1.167 | .248 | |
| 39 | Equal Variance | 1.100 | .272 | |
| | Unequal Variance | 1.025 | .310 | |

Age has significant impacts on Items 24, 37, 38, and 39 in Table 6. Employees with the age of 51-60 years old have significant perceptions than those between the age of 21-30 years old on Items 37 and 39. Thus, employees between the age of 51-60 years old feel less fatigued and stressful than those with the age of 21-30 years old. In addition, employees between the age of 21-30 years old perceive significantly better than those between the age of 41-50 years old on Item 24. That is, employees between the age 41-50 years old tend to work much harder. Moreover, employees with the age of less than 20 years old perceive higher satisfaction than those

between the age of 21-30 years old on Item 38. It indicates that employees who are less than 20 years old are more comfortable to work with people all day. From Table 7., employees do not have different perceptions in job status statistically.

*Table 6. ANOVA resultson emotional exhaustion for age*

| Item | F | Sig. | Bonferroni |
|---|---|---|---|
| 20 | 1.325 | .260 | |
| 22 | 0.979 | .419 | |
| 23 | 0.926 | .448 | |
| 24 | 3.786 | .005 | 2 > 4 |
| 35 | 1.099 | .357 | |
| 36 | 0.361 | .836 | |
| 37 | 3.499 | .008 | 5 > 2 |
| 38 | 3.532 | .008 | 1 > 2 |
| 39 | 3.684 | .006 | 5 > 2 |

*Table 7. ANOVA results on emotional exhaustion for job status*

| Item | F | Sig. | Bonferroni |
|---|---|---|---|
| 20 | 1.314 | .269 | |
| 22 | 0.296 | .829 | |
| 23 | 0.025 | .995 | |
| 24 | 1.231 | .298 | |
| 35 | 0.241 | .867 | |
| 36 | 0.443 | .723 | |
| 37 | 0.571 | .635 | |
| 38 | 1.961 | .119 | |
| 39 | 1.187 | .314 | |

Table 8. Summarizes experience in organization has significant impacts on Items 24, 38, and 39. In addition, Table 9. has the equivalent results that Items 24, 38, and 39 are influenced by experience in position. However, the post hoc analyses are somewhat different. Employees who have less than 6 months experience in organization have higher perceptions than employees who have 5 to 10 years on both 24 and 38. Additionally, employees who have less than 6 months experience in organization have better perceptions than those who have 11-20 years. Therefore, employees who have less than 6 months experience in organization are more comfortable to work with people all day and do not work much harder than employees with 5 to 10 and 11-20 years. For Item 39, employees who have 11-20 years and more experience in organization have significantly higher perception than those with 5-10 years. That is, employees with 11-20 years and more experience in organization feel less stressful to work with people. In contrast to experience in organization, employees with less than 6 months experience in position have significantly better perception than those with 5 to 10 and 11-20 years. Finally, both education and direct patient contact do not have any significant impacts on emotional exhaustion as shown in Tables 10. and 11.

*Table 8. ANOVA results on emotional exhaustion for experience in organization*

| Item | F | Sig. | Bonferroni |
|---|---|---|---|
| 20 | 0.606 | .726 | |
| 22 | 0.545 | .774 | |
| 23 | 0.497 | .811 | |
| 24 | 3.468 | .002 | 1 > 5, 1 > 6 |
| 35 | 1.541 | .163 | |
| 36 | 0.818 | .557 | |
| 37 | 1.342 | .237 | |
| 38 | 3.450 | .002 | 1 > 5 |
| 39 | 3.725 | .001 | 6 > 5, 7 > 5 |

*Table 9. ANOVA results on emotional exhaustion for experience in position*

| Item | F | Sig. | Bonferroni |
|---|---|---|---|
| 20 | 0.580 | .746 | |
| 22 | 0.918 | .482 | |
| 23 | 0.428 | .860 | |
| 24 | 3.427 | .003 | 1 > 5, 1 > 6 |
| 35 | 0.954 | .456 | |
| 36 | 0.467 | .833 | |
| 37 | 1.417 | .206 | |
| 38 | 2.337 | .031 | |
| 39 | 2.467 | .023 | |

*Table 10. ANOVA results on emotional exhaustion for education*

| Item | F | Sig. | Bonferroni |
|---|---|---|---|
| 20 | 0.413 | .662 | |
| 22 | 0.542 | .582 | |
| 23 | 0.517 | .597 | |
| 24 | 1.288 | .277 | |
| 35 | 0.563 | .570 | |
| 36 | 0.570 | .566 | |
| 37 | 1.162 | .314 | |
| 38 | 0.235 | .791 | |
| 39 | 1.429 | .241 | |

*Table 11. ANOVA results on emotional exhaustion for direct patient contact*

| Item | F | Sig. | Bonferroni |
|---|---|---|---|
| 20 | 0.311 | .783 | |
| 22 | 0.227 | .797 | |
| 23 | 0.062 | .940 | |
| 24 | 0.382 | .683 | |
| 35 | 0.676 | .509 | |
| 36 | 2.158 | .117 | |
| 37 | 0.384 | .682 | |
| 38 | 0.009 | .991 | |
| 39 | 0.296 | .744 | |

## 5. Conclusions

This study uses nine questions of emotional exhaustion from the Chinese version of safety attitudes questionnaire to analyze the perceptions of emotional exhaustion from the viewpoints of physicians and nurses of a regional teaching hospital in Taiwan with the 2014 internal surveyed data. Both independent sample t test for mean differences and analysis of variance are used to observe how physicians and nurses with different demographic information perceive different emotional exhaustion in terms of nine questions.

The results show that supervisor/manager, job position, age, experience in organization, and experience in position have impacts on emotional exhaustion. Table 12. summarizes the relationship between demographic variables and nine questions of emotional exhaustion. When a particular demographic variable has a significant impact on aquestion, an asterisk sign (*) is added in the cell. That is, more asterisks in each row indicate a demographic variable has more impacts on emotional exhaustion, while more asterisks in each row show that a particular question in emotional exhaustion might be influenced much more by demographic variables.

*Table 12.Relationship between demographic variables and emotional exhaustion*

| Demographic Variable | 20 | 22 | 23 | 24 | 35 | 36 | 37 | 38 | 39 |
|---|---|---|---|---|---|---|---|---|---|
| Gender | | | | | | | | | |
| Age | | | | * | | | * | * | * |
| Supervisor/ Manager | | | | * | | | | * | * |
| Job Position | | | | | * | | * | | |
| Job Status | | | | | | | | | |
| Experience in Organization | | | | * | | | | * | * |
| Experience in Position | | | | * | | | | * | * |
| Education | | | | | | | | | |
| Direct Patient Contact | | | | | | | | | |

Obviously, age has the most impact on emotional exhaustion followed by supervisor/manager, experience in organization, experience in position, and job position. From the hospital managerial viewpoints, these demographic variables might be the better segmentation variables to further examine emotional exhaustion for physicians and nurses. In contrast, Items 24, 38, and 39 are more critically important than the others followed by Items 37 and 35. Therefore, the hospital management needs to pay much attention to hard work and working with people particularly because of impacts from four demographic variables.

**Institutional Review Board Approval**

The clinical trial approval certificate (ethic statement) was approved by Cheng Ching General Hospital in Taichung City, Taiwan with protocol number of HP150029.

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