A Study of Total Quality Management, Employee Satisfaction, Patient Safety Culture Attitude and Related Factors among Clinical Nurses

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ABSTRACT

Method: A cross-sectional survey was conducted by applying convenience sampling for nurses with at least half a year work experience at five teaching hospitals in Taiwan.

Results: (1) TQM-oriented employee empowerment, teamwork, performance appraisal systems and compensation systems have a positive impact on employee satisfaction (2) TQM-oriented employee training does not have a positive impact on employee satisfaction (3) Employees’ job satisfaction has a positive impact on the employees’ patient safety culture attitude. (4) Employee training in TQM has a positive impact on the level of employee empowerment in hospital (5) Employee training in TQM has a positive impact on teamwork in hospital.

Keywords: clinical nurses, total quality management, employee satisfaction, patient safety culture attitude.
1. Introduction

The two significant medication errors occurred in Taiwan medical circle in recent years not only caused general public’s shock, but also revealed problems on primary medical management negligence, patient medication safety and medical personnel educational training, which need to be further reviewed and introspected. (Chen, Zhang, & Pan, 2009). Previous research indicated that hospital staff with more positive view on the patient safety culture tend to be more positive on patient care assessment. The improvement of patient safety culture is related to the improvement of patient nursing experience (Sorra, Khanna, Dyer, Mardon, & Famolaro, 2012). The safety culture is defined as the health and safety management of an organization, which is the value, attitude and view, as well as the competent behavior of the individual and group (Carney, West, Neily, Mills, & Bagian, 2010). It is important for the health care organization to build mutual trust among the staff and encourage the staff to share their feelings through the positive patient safety culture to form the common perception to the safety significance.

The total quality management (TQM) is a kind of management concept with customer oriented feature, stressing on the continuous improvement system and process to reduce the variation and keep the improvement through the staff participating in the quality improvement plan within the organization. The total quality management is to ensure the staff doing the correct thing in the first time and during each time, and rethinking what they did, as well as how to improve the quality, through the employee empowerment to do the correct thing during the process within the organization (Rennie, Phetsouvanh, Lupisan, et al., 2007). Many empirical studies indicated that the successful implementation of TQM could increase the staff participation, improve the communication, work efficiency, customer satisfaction, and competitive advantage (Talib, Rahman, & Qureshi, 2010). Many researchers found that TQM procedure could increase the economic performance (in terms of hospital stays, cost and
labor productivity), clinical treatment effect, customer satisfaction, and hospital performance
in the market share aspect.

As the importance of manpower issue recognized the patient safety has become the most
cconcerned topic for discussion in the global medical system; along with the emphasis of
international community and endeavors of promoting the patient safety, the health competent
authorities, medical institutions and non-governmental organizations in Taiwan have
positively adopted several medical safety enhancement measures. Among the factors affecting
the patient safety other than the nursing manpower, and other personnel’s educational and
training as well as medical facility, hospital environment is also an very important factor
influencing the patient safety (Lin & Liang, 2007). Hospitals applying the total quality
management to solve the problem of service quality and patient safety have brought obvious
improvement. However, there are only few researches addressing this issue, especially under
he developing countries setting (Alaraki, 2014).

Previous research shows the patient-orientated nursing work environment would increase
the patient safety and nurses’ job satisfaction. Furthermore, the patient-orientated
organization atmosphere could reduce the medical treatment error. When the medical error
frequency is low, the medical personnel shall reduce some of their worries, and thus have
higher job satisfaction ( Rathert, & Douglas, 2007).

Research on examining whether the total quality management and employee
satisfaction have positive correlation, and whether the employee satisfaction could bring
significant impact on the promotion of patient safety culture attitude still need further
investigation. The research in this aspect is quite few. This study is in the expectation of
understanding the correlation of the total quality management, employee satisfaction and
patient safety culture attitude. The research findings could serve as a useful reference for the
hospital administrators for developing measures to enhance patient safety culture attitude and
thus improve the health care performance. For the aforesaid research background and significance, this study assumed:

H1: TQM-oriented employee empowerment has a positive impact on employee satisfaction in hospital nurses.

H2: TQM-oriented employee training does not have a positive impact on employee satisfaction in hospital nurses.

H3: TQM-oriented teamwork has a positive impact on employee satisfaction in hospital nurses.

H4: TQM-oriented performance appraisal systems have a positive impact on employee satisfaction in hospital nurses.

H5: TQM-oriented compensation systems have a positive impact on employee satisfaction in hospital nurses.

H6: TQM have a positive impact on employee satisfaction in hospital nurses.

H7: Employees’ job satisfaction has a positive impact on the employees’ patient safety culture

H8: Employee training in TQM has a positive impact on the level of employee empowerment in hospital.

H9: Employee training in TQM has a positive impact on teamwork in hospital.

2. Literature Review

1. Total Quality Management (TQM):

   TQM is simply defined as an element of the overall management, to require every employee in the organization keeping striving in the daily management of the company, to improve and realize the organization and quality, and satisfy the customer demand to enhance the company performance (Lam, Lee, Ooi, & Lin, 2011). The amount of customer-orientated company is increasing, through the quality driving strategy and adopting the total quality
management. TQM could increase the enterprise’s long-term benefit, provide the high-quality service, and TQM enhanced product innovation performance (Lee, Ooi, Tan, & Chong, 2010). TQM system is a useful tool, which could promote learning and supporting the latest knowledge to be applied to the entire organization (Khadra & Rawabdeh, 2006).

In the organization, the key of successful leadership of senior management team is to implement the total quality management (TQM). There are empirical studies showing that the specific feature of leader is to successfully lead by the TQM plan and the basic leading feature of medical environment leader is to effectively implement the TQM (Nwabueze, 2011). There are also other researches showing that the basic features of the leader shall include the total quality management of the organization and the enough guidance. From the smallest to the largest organization, only the appointed leader providing the total quality management shall succeed. TQM is very practical, which goes all the way with the precision of clocks (Nwabueze, 2011).

2. Job Satisfaction:

Job satisfaction is very important to the nursing career. Those nurses getting the balance of work and life and with high job satisfaction usually have high commitment in the organization and good nursing quality (Tanaka, Maruyama, Ooshima, & Ito, 2011). The research indicates that the age, years of experience, educational background, marital status, work unit and position of the nurse are all the relevant factors of the job satisfaction, in which, the aged, experienced, and married nurses tend to have higher job satisfaction (Lee, Wu, & Feng, 2013). The internal service quality shall have an effect on the external service quality through the job satisfaction and service capacity. Therefore, only the satisfied employee shall make the customer satisfied; and the nurse is one of the key elements for the hospital establishing the competitive advantage to provide satisfied service (Lu & Cheng, 2007).
Understand the job satisfaction of the nurses shall help the nurse administrator of the organization to make the right decision and provide appropriate service in favor of the customers. The negative emotion in the work shall influence the job satisfaction of the nurse, and the job satisfaction of the nurse may affect the entire health care team (Lu, While, & Barriball, 2005). It is indicated that positive organization culture and work environment have significant impact on the job satisfaction of the nurses, and in turn, it shall also influence the patient satisfaction (Garcia, et al., 2011). To remit the problem through different ways, adjust the existing training system and workflow, positively increase the mental health of the nurse, and further improve the job satisfaction of the nurse and patient (Gountas, Gountas, Soutar, & Mavondo, 2013). Nurse’s work satisfaction is influenced by work environment and professional commitment. According to a latest theoretical framework, work environment, work value and nursing staff’s job satisfaction are interacted. Work environment improvement has positive influence on job satisfaction and the upgrading of internal and external work values can enhance professional commitment and increase job satisfaction (Caricati, et al., 2014).

3. Patient Safety Culture:

The medical research report indicates that: in USA, there were over 98,000 patients died for the reason of human medical malpractice. This bad result has certain relation to the recovery time and hospital stays (Kohn, Corrigan, & Donaldson, 2000). The medical research report stresses on, when the medical negligence causes injury, and is called as the adverse event, we shall understand that in the adverse event and the event not causing injury, the hospital has better way to avoid its occurrence, in which they emphasize to understand the human factor (Ross, 2009). The patient-orientated nursing gets more and more attention recently, which seems to be an attractive option, however, on the basis of examining the hospital quality plan, the concept of patient treatment amount has become outdated, and the
strategy management shall include the workflow driven and incentive structure (Kind, 2003). According to the high reliability organization theory, to realize the high reliability needs very safe culture, to uniformly give consideration to both the safety attitude and experience. It is insufficient only with the strong support for safety principle, and engaging in corresponding behaviors, because almost everyone shall do this all the time. In general, the atmosphere of the team, job satisfaction, work stress, and safety culture improvement has the high relevance (Chaboyer, et al., 2015)

In the case of medical negligence, some potential factors, such as the organization procedure, were involved and these potential factors may cause many errors. Every good practice should have good preventive measures to avoid the failure caused by some unexpected reasons. Every member of the organization could play a key role in the error correcting culture. It is important for the health care team leader to evaluate the potential factor on human fault and near error report, and strengthen the employee education in the patient safety culture to reduce the occurrence of adverse event (Ross, 2009).

4. Total Quality Management and Employee Satisfaction:

Many empirical researches indicated that successful implementation of TQM has increased employee participation, and improved mutual communication, work efficiency, customer satisfaction, and competitive advantage. The total quality management is a concept concentrating on the continuous improvement of the system and flow. Its feature is customer orientation, continuous improvement, reducing variation, and employee participating in the design and implementation of quality improvement plan within the organization (Rennie, Phetsouvanh, Lupisan, et al., 2007). Many studies proved that effective and scheduled implementation of TQM is obviously conducive to improve the customer satisfaction (Mehra & Ranganathan, 2008; Sit, et al., 2009). Previous research also showed that the employee empowerment, cooperation and coordination, employee salary and management leadership
are all in the positive relation to the employee satisfaction (Chang, Chiu, & Chen, 2010).

TQM cultivates and maintains the organization culture and supports the continuous
improvement of the organization’s position, which is related to the customer satisfaction,
customer loyalty and remaining in office (Rajshekhar, et al., 2005). Besides, researches also
revealed that the implementation of TQM, including the employee empowerment, team work,
employee reward and employee satisfaction, has the positive relation (Jun, Cai, & Shin, 2006).
Some researches have found the medical service quality and patient satisfaction are positively
associated (Lee, Wu, & Feng, 2001). Nurses’s job satisfaction was found to be significantly
related to five work environment related aspects: professional dedication, relation with
colleagues, management strength, manpower and resource allocation, as well as the ward
operation practice, which enlightens the nursing management work should stress on planning
to effectively manage and eliminate the limits affecting the nursing practical work (Choi,
Cheung, & Pang, 2013).

(1) Employee training and employee satisfaction:
Choo and Bowley pointed out that the employee training has positive effect on the employee
work efficiency, which will increase the employee satisfaction, and it also showed the
advantage of training, which could improve the employee practical skill, increase the
motivational reward, productivity (Choo & Bowley, 2007). Martensen and Gronholdt (2001)
found that the employee capacity development has the positive effect on the employee
satisfaction through the training course. Nevertheless, other research indicated that the
employee training and employee satisfaction have negative relation (Jun, Cai, & Shin, 2006;
Chang, Chiu, & Chen, 2010).

(2) Employee empowerment and employee satisfaction:
The social environment of the unit is associated with the job satisfaction of the nurses. the
relationship between the value of ethics and caring climate and organizational values and
people, including: authorization, participation and public discussion, and the sensitivity to the employee opinion, loyalty and trust all have relevance to the job satisfaction; when the nurse attitude is positive, the job satisfaction tends to increase (Verplanken, 2004).

(3) Team work and employee satisfaction:

Indicated that the relation between nurse and other members is one key factor on the job satisfaction, and the other key factor includes the quality of health care provided to the patient. The good communication and coordination of the nurses and other medical care members could predict the job satisfaction of the nurse. The division of the team and team work could be combined to predict the job satisfaction. (Newman & Maylor, 2002). The research of Rahman and Bullock (2005) showed that the team work and employee emotion have the positive relation, and another research also indicated the team work and employee satisfaction have the positive relation (Jun, Cai, & Shin, 2006; Chang, Chiu, & Chen, 2010).

(4) Appraisal system and employee satisfaction:

Jun, Cai, & Shin (2006) found the appraisal system and employee satisfaction have the negative relation.

(5) Employee reward and employee satisfaction:

The job satisfaction could be deemed as the positive concept described particular work attitude (Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001) and the job satisfaction is related to the interpersonal relationship of the nurse and the patient. The nurse manager has powerful acceleration since the increase of salary usually significantly improve the job satisfaction of the nurse (Utriainen & Kynga, 2009).

5. Staff satisfaction and patient safety culture attitude:

As indicated by researches and theories, patient-centered nursing work environment is beneficial to improve patient’s safety and nurse satisfaction. Nursing staff in patient-centered work units has better job satisfactions as compared to those units not take patient as its center.
Patient-centered pattern nursing could create a work environment that is beneficial to improve patient safety and nursing staff satisfaction, and such patient-centered work environment management shows significant positive result in upgrading patient, staff and organization (Rathert & May, 2007). Rathert’s theory (2005) recognized that patient-centered nursing has influence on professional medical servicer’s outcome, e.g.: work satisfaction and medical error reduction. When medical error is relatively lower, staff will become less worried and more concerned about medical error, therefore has higher work satisfaction. What counts is that staff satisfaction tends to be significantly higher than such organizations. With respect to medical treatment, nurses will feel more satisfied when they have the abilities to form a meaningful relation with patients (Ulrich, Buerhaus, Donelan, Norman, & Dittus, 2005), while become unsatisfied about their work and occupation when they do not have sufficient resources to satisfy their patients’ needs (Shaver & Lacey, 2003). Patient-centered nursing has influence on professional medical servicer’s outcome, such as work satisfaction and sense of safety for reporting medical error. Disposition of nursing manpower, improvement of nurse’s work environment as well as nursing staff’s education have significant relation with patient’s death rate. Therefore, the improvement on hospital’s disposition of nursing manpower and work environment helps to reduce and prevent death number in hospital (Cho, et al., 2015). It has been studied that the following high-quality patient-nursing service experience would increase job satisfaction: provide nice medical care, accept recognitions from patient and relatives, see patient’s happiness, see patient leave hospital with health, has a chance to participate in major events and provide the deepest care from heart (Perry, 2005).
3. Research Method

1. Research Framework:

   - Employee empowerment
   - Employee training
   - Teamwork
   - Appraisal Systems
   - Employee compensation

   H1 \rightarrow H2 \rightarrow H3 \rightarrow H4 \rightarrow H5 \rightarrow H6 \rightarrow H7

2. Research Design:

   The Research examined relevant descriptive researches in hospital setting and adopted Convenience Sampling to carry out a cross-sectional structured questionnaire survey, whose sampling objects are medical staff with more than half a year work experience among medical centers, regional teaching hospitals and local teaching hospitals in Taiwan.

3. Research Tool:

   (1) Questionnaire contents:

   Questionnaire contents under the research mainly include: personal basic data, work value scale, overall quality management scale, staff job satisfaction scale and patient safety culture.
scale.

(2) Questionnaire reliability and validity test:

Expert content validity test was adopted and examined by domestic experts (including one professor in management science, one nursing professor, one hospital president and one nursing department director with more than ten-year administrative experience) in accordance with topic importance, suitability and definition.

Overall quality management and satisfaction scales compiled by Jun et. al (2006) were adopted, with Cronbach’s $\alpha$ higher than 0.7. The scale consists of 24 questions. A higher score represents a more positive view of overall quality management and satisfaction.

Patient safety culture attitude scale compiled by Perneger et al (2013) was adopted, with Cronbach’s $\alpha$ higher than 0.6. The scale consists of 42 questions. A higher score represents a more positive view of patient safety culture recognition.

4. Data Collection Process:

After acquiring approval from the Institution Review Board (IRB), the research purpose, object conditions and questionnaire notices were clearly presented to the head of unit. Each questionnaire is packaged in individual envelope, and attached with a letter of consent, a gift and an return envelope with double faced adhesive tape. After completely filled, objects may separately put questionnaires and letters of consent into the attached envelopes, seal and drop into their units’ collection boxes. Researchers then get back those questionnaires two weeks later, and all questionnaire data are kept as confidential without names or other specific personal information.

5. Data Analysis

All the data were coded and further analyzed using SPSS statistic software (version 14.0). Statistical methods chosen and results shown were data percentage, mean, standard deviation, Pearson’s correlation coefficient, independent t-test, one-way ANOVA, multiple regression
4. Research Result

A total of 492 valid responses were received with retrieved rate 70.3%.

Table 1  Demographic Data

<table>
<thead>
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<th>Category</th>
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<tr>
<td></td>
<td></td>
<td>26-30</td>
<td>73</td>
<td>14.8</td>
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<td></td>
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<td>31-35</td>
<td>113</td>
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<td>108</td>
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<td>41-45</td>
<td>73</td>
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<td>46-50</td>
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<td>two</td>
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<td>type of work</td>
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<td>14.8</td>
</tr>
<tr>
<td>(including previous</td>
<td>492</td>
<td>8-12 years</td>
<td>99</td>
<td>20.2</td>
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<td>employer)</td>
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<td>12-16 years</td>
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<td>356</td>
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<td>Incharge</td>
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<td>Head Nurse</td>
<td>73</td>
<td>14.8</td>
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H1: TQM-oriented Employee Empowerment has a positive impact on employee satisfaction in hospital nurses.
H2: TQM-oriented Employee training does not have a positive impact on employee satisfaction in hospital nurses.

H3: TQM-oriented Teamwork has a positive impact on employee satisfaction in hospital nurses.

H4: TQM-oriented performance appraisal systems have a positive impact on employee satisfaction in hospital nurses.

H5: TQM-oriented compensation systems have a positive impact on employee satisfaction in hospital nurses.

Table 2  Dependent variable: Satisfaction

<table>
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<tr>
<th>Source</th>
<th>III sum-of-squares</th>
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<td>.408</td>
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a. $R^2 = .367$ (R$^2$ after adjustment = .360)
H6: TQM have a positive impact on employee satisfaction in hospital nurses.

Table 3  Dependent variable: Satisfaction

<table>
<thead>
<tr>
<th>Source</th>
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</table>

a. $R^2 = .340$ ($R^2$ after adjustment = .338)

H7: Employees’ job satisfaction has a positive impact on the employees’ patient safety culture attitude.

Table 4  Dependent variable: Patient safety culture attitude

<table>
<thead>
<tr>
<th>Source</th>
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</table>

a. $R^2 = .289$ ($R^2$ after adjustment = .287)
H8: Employee training in TQM has a positive impact on the level of employee empowerment in hospital.

Table 5  Dependent variable: employee empowerment

<table>
<thead>
<tr>
<th>Source</th>
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<td>325.961</td>
<td>1</td>
<td>325.961</td>
<td>105.894</td>
<td>.000</td>
</tr>
<tr>
<td>Employee training</td>
<td>829.395</td>
<td>1</td>
<td>829.395</td>
<td>269.442</td>
<td>.000</td>
</tr>
<tr>
<td>Error</td>
<td>1508.313</td>
<td>490</td>
<td>3.078</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number</td>
<td>113398.000</td>
<td>492</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number after calibration</td>
<td>2337.707</td>
<td>491</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a.  $R^2 = .355$ ($(R^2$ after adjustment $= .353$)
H9: Employee training in TQM has a positive impact on teamwork in hospital.

Table 6  Dependent variable: teamwork

<table>
<thead>
<tr>
<th>Source</th>
<th>IIIsum-of-squares</th>
<th>df</th>
<th>Average sum-of-squares</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema after calibration</td>
<td>368.949(^a)</td>
<td>1</td>
<td>368.949</td>
<td>217.71</td>
<td>0.000</td>
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<tr>
<td>Intercept</td>
<td>334.531</td>
<td>1</td>
<td>334.531</td>
<td>197.40</td>
<td>0.000</td>
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<tr>
<td>Employee training</td>
<td>368.949</td>
<td>1</td>
<td>368.949</td>
<td>217.71</td>
<td>0.000</td>
</tr>
<tr>
<td>Error</td>
<td>830.393</td>
<td>490</td>
<td>1.695</td>
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<td></td>
</tr>
<tr>
<td>Total number number after</td>
<td>72480.000</td>
<td>492</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>calibration</td>
<td>1199.341</td>
<td>491</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

a. a. \( R^2 = .308 \) (\( R^2 \) after adjustment = .306)

Summary of the hypothesis test:

Based on the research framework of this study, the results of hypothesis test are summarized in Table 7. As for the relationships between TQM practices and employee satisfaction, employee empowerment was found to be the most important determinant of employee satisfaction, followed by teamwork and employee compensation. Thus, Hypotheses 1, 3, 4, 5, and 6 are supported (\( p < 0.01 \)). However, Hypotheses 2 which predict that employee training have positive impacts on employee satisfaction, are not confirmed. In terms of the mediation effect of employee training, both Hypotheses 8 and 9 are also supported, as training demonstrates its significant and positive influence on employee empowerment (\( p < 0.01 \)).
and teamwork (p < 0.01). Hypothesis 7 is also supported; that is, employee satisfaction has a very strong and positive effect on patient safety culture attitude to their companies (p < 0.01).

Table 7  Summary of the hypothesis test result based on research framework

<table>
<thead>
<tr>
<th>Association</th>
<th>Hypothesis</th>
<th>Causal path</th>
<th>Path Coefficients</th>
<th>t-Value</th>
<th>Hypothesis supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQM practice and employee satisfaction</td>
<td>H1</td>
<td>EE → ES</td>
<td>.124</td>
<td>2.325</td>
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<td></td>
<td>H2</td>
<td>ET → ES</td>
<td>-.046</td>
<td>-.827</td>
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<tr>
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<td>H3</td>
<td>TW → ES</td>
<td>.180</td>
<td>2.415</td>
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</tr>
<tr>
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<td>H4</td>
<td>AS → ES</td>
<td>.264</td>
<td>4.190</td>
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<tr>
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<td>H5</td>
<td>CS → ES</td>
<td>.235</td>
<td>7.402</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>H6</td>
<td>TQM → ES</td>
<td>.157</td>
<td>15.875</td>
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<tr>
<td></td>
<td>H8</td>
<td>ET → EE</td>
<td>.612</td>
<td>16.415</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>H9</td>
<td>ET → TW</td>
<td>.408</td>
<td>14.755</td>
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<tr>
<td>employee satisfaction and patient safety culture attitude</td>
<td>H7</td>
<td>ES → PSCA</td>
<td>3.016</td>
<td>14.096</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5. References


[7] Choi, S. P., Cheung K, & Pang, S. M. Attributes of nursing work environment as


2-11.


6(2):249-268.


