

Multiple Interactions of Hazard Exposures, Role Stressors and Situational Factors, and Burnout Among Nurses

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This was a cross-sectional study which looked into the interaction between situational factors, role stressors, hazard exposure and personal factors among 135 nurses in the Philippine General Hospital. More than half (58.5%) of the respondents reported being ill due to work in the past year, and 59.3% missed work because of an illness. Regression showed factors associated with burnout were organizational role stress, hazard exposure, self-efficacy, age, number of working years, illness in the past 12 months, migraine, dizziness, sleep disorder, cough and colds, and diarrhea. After multiple regression analysis, organizational role stress ($p = .000$), migraine ($p = .001$), age ($p = .018$) and illness in the past 12 months ($p = .000$) were found to be significant predictors of burnout. The contribution of the study is in advancing new concepts in the already existing framework of burnout, and thus, assisting nurses and hospital administration in controlling this problem.

burnout organizational role stressors hazard exposures situational factors nurses

1. INTRODUCTION

Burnout has been discussed for a number of years. The concept was first introduced more than 30 years ago by Freudenberg, Maslach and Pines [1]. The intense interest in the topic at that time was fueled by the influx of workers entering the human service professions, which include social services, education, criminal justice and health services. These workers are particularly vulnerable to burnout due to the nature of the interpersonal interactions and the organizational factors present in the helping professions [2].

Over the following years, the need for human service professionals in many countries had grown due to the aging population [1]. The prevailing social and organizational conditions among the helping professions have led to an overworked, underpaid and frustrated group of workers. Human

service professionals have been characterized as a group of men and women who make huge sacrifices in the hope of meeting high demands. Yet they often reap few rewards, and are asked to do more and more with less and less.

Many researchers in various fields have studied burnout among this group, hoping to find patterns, causation, relationships and practical applications. Two of them, Maslach from the University of California at Berkeley and Jackson from New York University, presented burnout as a psychological syndrome with three dimensions: (a) emotional exhaustion, (b) depersonalization, and (c) diminished personal accomplishment [3, 4]. Emotional exhaustion is described as the experience of stress which approaches, or is above, a person's comfortable limits, while depersonalization is the development of a cynical and negative attitude towards clients, sometimes to

the point of dehumanization. On the other hand, decreased personal accomplishment is defined as a negative outlook on one's performance at work.

The Maslach Burnout Inventory (MBI), which is the most widely used measurement tool in burnout research, was used in this study. MBI follows the three aspects of burnout originally proposed by Maslach and Jackson [3, 4]. However, this model is not without its critics, and some investigators have presented alternative perspectives on the matter. Golembiewski and Munzenrider [5] constructed a well-validated eight-phase model of burnout which expounds on ways individuals experience the stressors they encounter, even outside of the workplace. Golembiewski also suggested that burnout distribution followed a contagious pattern, spreading to individuals not previously affected [6]. In the Philippines, Cecilia [7] discussed an expert-based classification of burnout into three levels or degrees. In this classification, first-degree burnout is described as a feeling of tiredness, exhaustion or fatigue. On the other hand, irritation, resentment, sarcasm and cynicism characterized second-degree burnout. Lastly, third-degree burnout was described as loss of self-esteem, sense of achievement, and desire to work. Compassion fatigue, a form of burnout that results in impaired caregiving and poor quality of care, could also occur in nurses [8].

Other investigators have tried to look into factors associated with burnout. Lambert and Lambert [9] examined relationships among various workplace stressors, ways of coping, demographic characteristics, and physical and mental health among Japanese hospital nurses and found that workload and the number of people living in the household were the best predictors of physical health. Meanwhile, the best predictors of mental health were likelihood to leave the job, lack of support in the workplace and escape-avoidance coping.

Lee, Song, Cho, et al. [10] conducted a study to form a comprehensive model of burnout among Korean nurses in light of the lack of literature on the subject in Asia. They found that Korean nurses had higher levels of burnout compared to those in western countries such as Germany,

Canada, the United Kingdom and the USA. Furthermore, those who experienced higher job stress, showed lower cognitive empathy and empowerment, and those who worked on night shifts at tertiary hospitals were more likely to experience burnout.

A number of personal factors have also been associated with burnout. These include perfectionism, over-involvement with patients, self-esteem, sense of mastery and purpose in life [11], low education level, low work experience, low status, economic hardships, difficulty in childcare and doing house chores, and personal and family health problems [12]. Interpersonal variables such patient and family stressors and stressful interactions with colleagues have also been found to be involved [10].

Burnout has been associated with various social, psychological and health outcomes. Maslach, Jackson and Leiter [13] found that burnout led to diminished quality of care and is a factor in job turnover, absenteeism and low morale. They also found that it was correlated with a number of self-reported indices of personal dysfunction, which included marital and family problems, physical exhaustion, insomnia, and use of alcohol and drugs. Furthermore, the results of Golembiewski, Boudreau, Sun, et al. [6], who used an eight-phase model of burnout, showed that it led to a decrease in job involvement, job satisfaction and group cohesiveness; deterioration in performance indicators and family life; and in increase in intentional and actual turnovers, physical and emotional symptoms and costs of medical insurance. Then, the Copenhagen Burnout Inventory also uses indices for work-related burnout such as the state of prolonged physical and psychological exhaustion.

Organizational role stressors are also significantly associated with burnout. In this study, there are several dimensions of organizational role stressors such as inter-role distance which covers work-home conflict, e.g., work in the hospital may interfere with the demands at home [14]. Role stagnation can refer to lack of career development or lack of nonmonetary incentives [15]. Role expectation conflict refers to disparity in actual

job performance and expectations of superiors and colleagues [16]. Role overload is performing several jobs at the same time or having to deal with many patients at one time [4]. Role isolation can result from role overload since employees who have much work may not be able to interact significantly with colleagues and people who they consider significant in their life [17]. Personal inadequacy may emanate from lack of training to cope with a job or a subjective feeling about one's self-doubt and insecurities [18]. Self-role distance refers to the demands of the job that may conflict with one's personal beliefs, e.g., blood transfusion is not permitted by certain religious beliefs [19]. Role ambiguity may ensue from lack of orientation in one's scope of responsibilities [20]. Lastly, resource inadequacy pertains to unavailability of monetary and non-monetary incentives at work [21].

In light of the adverse outcomes associated with burnout, many investigators have identified ways and techniques to alleviate this syndrome among nurses and other human service professionals. Hsieh, Hsieh, Chen, et al. [22] discussed a quality called hardiness, which they described as an inherent personality trait which buffered the health related effects of stress. Meanwhile, Cohen-Katz, Wiley, Capuano, et al. [23] proposed a stress-reduction program called Mindfulness-Based Stress Reduction that emphasized self-care, compassion and healing makes, and was a promising intervention for helping nurses manage stress and reducing burnout.

This study aims to look into the possible interaction between situational factors, role stressors, hazard exposure and personal factors, and burnout and to determine the effect of hazard exposure on burnout among nurses in various hospital departments. It also intends to identify the most significant factor in the development of burnout among this group and to assess its relationship to various health outcomes. This is a worthwhile endeavor in light of the personal, social and professional impact of burnout among workers, patients and managers alike.

Also, if situational factors were found to be significant, burnout may be considered a workplace issue. Hence, a framework of

work-related factors affecting burnout may be elucidated. On the other hand, if personal factors were found to be statistically significant, then burnout may not be considered as a workplace issue or an occupationally related illness. Hence we can look into possible insights on how management can promote lifestyle and self-enrichment programs that may prevent or reduce burnout. Similarly, a significant contribution by hazard exposure would mean that burnout may now be considered as an occupationally-related illness, and must be considered for possible compensation. Lastly, hierarchical multiple regression will allow us to assess the degree of contribution of specific risk factors to burnout and also to look at their moderating effects over each other.

Burnout in this study is conceptualized as a state of emotional exhaustion coupled with depersonalization and role ambiguity. There are four main groups of factors that are considered in this study that affect feeling and state of burnout among nurses: hazard exposures, personal factors, organizational role stressors, and situational factors reflecting job satisfaction.

The organizational role stress in this study is expounded to consider other factors that may contribute to burnout. The lack of self-efficacy, on the other hand, is considered in this study as related to burnout. It is hypothesized that individuals who do not have adequate training for the work and positive valuation of themselves are more likely to encounter burnout.

2. METHOD

2.1. Sample

Among the 135 respondents, the majority were female (77.8%) and married (54.8%). Most of the respondents belonged to the 31–40 age group (37%), with ages ranging from 21 to 56 ($M = 32.28$). This indicated that they were in their early to middle adulthood, and already had at least a few years' experience in their profession. The average annual income of most respondents ranged from 100 000 to 150 000 Philippine peso

(US \$2000–3000) (31.9%), which was low compared to that in private hospitals or among other health professions. Most nurses had been in their profession for 1–5 years (30.3%) and had been employed in the Philippine General Hospital (PGH) for the same period of time (49.6%). Seventy-seven or 57% worked in inpatient services while 24.4 and 17.8% were assigned to the intensive care unit (ICU) and outpatient services, respectively.

This was a cross-sectional study that used stratified sampling techniques. Stratification was based on the ward and unit assignments of the nurses. One hundred and thirty-five nurses from the various wards of PGH, which is the largest tertiary hospital in the Philippines, were randomly selected for the study and asked to fill out a questionnaire.

2.2. Measures

The questionnaire assessed five main indices:

1. Burnout: 22 questions with a scale of 1–7 ranging from *very much unlike me* to *very much like me*. Examples of self rating: “I feel used up at the end of the workday”, “I feel fatigued when I get up in the morning and have to face another day on the job”, “I feel I treat some recipients as if they were impersonal objects”. The concept of burnout was based on MBI, which is the most widely used measurement tool in burnout research. The items included aspects on emotional exhaustion, depersonalization and diminished personal accomplishment [3, 4].
2. Organizational role stress (ORS): 37 questions with the same scale as for burnout. Examples: “Do you experience conflict between your roles and functions at home and at work?”, “Do you feel that your role in the hospital is minimal or insignificant since many others share the duties and responsibilities given to you?”, “Do you feel that your superiors demand more of you than you can comfortably handle?”.

The items on ORS were based on the Organizational Role Stress Scale constructed by Pareek [24], who divided role stress into 10 dimensions, namely: (a) Inter-Role

Distance (IRD); (b) Role Stagnation (RS); (c) Role Expectation Conflict (REC); (d) Role Erosion (RE); (e) Role Overload (RO); (f) Role Isolation (RI); (g) Personal Inadequacy (PI); (h) Self-Role Distance (SRD); (i) Role Ambiguity; and (j) Resource Inadequacy (RIIn). The individual questions, however, on the 10 dimensions were reconstructed to suit the Filipino cultural view of organizational stressors [25].

3. Self-efficacy (SE): 10 questions with the same scale rating. Examples: “I can always manage to solve difficult problems if I try hard enough”, “If someone opposes me, I can find means and ways to get what I want”, “I can solve most problems if I invest the necessary effort”. The General Perceived Self-Efficacy scale was developed by Schwarzer and Jerusalem [26]. SE means a positive valuation of oneself relative to performance, ability, self significance, esteem and a sense of achievement.
4. Hazard exposure (HE): 15 questions pertaining to various hazards at work such as noise, poor biomechanics, poor ventilation and exposure to infectious or blood borne diseases. HE was measured in terms of four categories: physical, chemical, biological and ergonomic hazards. The questions on HE were based on the author’s previous study on factors affecting job stress [25].
5. Situational factors (SF): 20 questions using the same scale rating. The scale was constructed to show the degree of job satisfaction. Examples included the way the job provides steady employment, a feeling of accomplishment one gets from the job and opportunities for promotion. These situational factors were concepts relating to job satisfaction. Situational factors were assessed using items from the Minnesota Satisfaction Questionnaire Short Form [27].

Reliability of the questionnaire was measured and found to be significant. Cronbach’s α for subquestions on each dimension were as follows: burnout .76, SE .93, HE .71, SF .88 and ORS .72; and for all those factors together (SE, HE, ORS, SF) $\alpha = .64$.

Since the item questionnaire had been used separately in other settings, only pre-testing was done to look into the validity of the items. This study utilized and referenced existing standardized questionnaires to come up with a unique questionnaire for Filipino nurses in a particular setting. This can then be used as a standard for other burnout research endeavors in the country, and applied to other occupational groups. Data were encoded and analyzed using SPSS version 11.0.

3. RESULTS

3.1. Data on Health and Illness

More than half (58.5%) of the respondents reported working making them ill in the past 12 months, and 59.3% have that they missed work because of an illness. However, only 8 or 5.9% were hospitalized. In contrast, 75 or 55.6% were currently taking medications, most of which were antibiotics (20.6%) and antipyretics (10.7%). This indicated a high rate of self-medication among the participants. Among those

who missed work, the majority were afflicted with an upper respiratory tract infection (16.7%) and were absent for less than a week (30.4%). Meanwhile, the top five symptoms among the respondents were headache (78.5%), cough and colds (74.1%), back pain (65.2%), leg cramps (46.7%) and sleep disturbances (42.2%). These symptoms most commonly occurred once a month (Table 1).

3.2. Correlations

Table 2 shows the results of a bivariate correlation analysis on burnout and associated factors. Spearman’s ρ was used to account for nonlinear distributions and outliers. Burnout was positively correlated with organizational role stress and hazard exposure. There was a significant negative correlation with self-efficacy, indicating that low self-efficacy might be a factor in the development of burnout. The respondent’s age and the number of years as a nurse were also negatively correlated with burnout. This means that burnout was closely linked with younger and less experienced nurses who had not yet developed coping strategies at work. Illness in

TABLE 1. Frequency Distribution of Illnesses (N = 135)

Illness	Frequency	%	Most Common Frequency of Occurrence
Headache	106	78.5	Once a month
Cough and colds	100	74.1	Once a month
Back pain	88	65.2	Once a day
Leg cramps	63	46.7	Once a month
Sleep disturbances	57	42.2	Once a day
Dizziness	44	32.6	Once a month
Migraine	41	30.4	Once a month
Diarrhea	41	30.4	Once a month
Hyperacidity	41	30.4	Once a day
Stiff neck	34	25.2	Once a month
Depression	32	23.7	Once a month
Indigestion/dyspepsia	30	22.2	Once a month
Chest Pain	29	21.5	Once a month
Constipation	28	20.7	Once a month
Allergy	25	18.5	Once a month
Blurring of vision	16	11.9	Once a month
Difficulty breathing	13	9.6	Once a month
Asthma	11	8.1	Once a month
Others	11	8.1	Once a month

the past 12 months was positively correlated with burnout, signifying the possible health consequences of this syndrome. Furthermore, the specific symptoms which were also found to be correlated with burnout were migraine, dizziness, sleep disorder, cough and colds, and diarrhea.

Meanwhile, Table 3 shows that 7 of the 10 ORS dimensions were significantly correlated with burnout, with REC and RO being significant at the .01 level.

TABLE 2. Correlation of Factors and Symptoms Associated With Burnout

Factor/Symptom	Spearman's ρ	Significance
ORS	.412	.000
SE	-.192	.026
HE	.282	.001
SF	-.136	.114
Age	-.221	.018
Number of years as a nurse	-.207	.026
Illness in the past 12 months	.203	.019
Migraine	.276	.001
Dizziness	.174	.043
Sleep disorder	.228	.008
Cough and colds	.204	.008
Diarrhea	.210	.015

Notes. ORS—organizational role stress, SE—self-efficacy, HE—hazard exposure, SF—situational factors.

TABLE 3. Correlation Between Burnout and ORS Dimensions

ORS Dimension	Spearman's ρ	Significance
IRD	.182	.035
REC	.336	.000
RE	.233	.007
RO	.467	.000
RI	.269	.002
PI	.170	.049
RIn	.231	.007

Notes. ORS—organizational role stress, IRD—inter-role distance, REC—role expectation conflict, RE—role erosion, RO—role overload, RI—role isolation, PI—personal inadequacy, RIn—resource inadequacy.

3.3. Multiple Linear Regression Analysis

A multiple linear regression analysis showed that ORS contributed significantly to burnout. No significant contribution was seen among SF, HE and SE. However, SE and HE together exerted a significant influence ($p = .002$). The same was also found among SE and RS ($p = .000$), SF and HE ($p = .005$) and SF and RS ($p = .000$). Other significant predictors of burnout included migraine ($p = .001$), age ($p = .018$) and illness in the past 12 months ($p = .000$) (Table 4).

TABLE 4. Multiple Regression of Factors Associated With Burnout

Factor	R^2	β
ORS**	.181	0.306
SF	.027	-5.640
HE	.063	0.111
SE	.011	-7.370
SE \times HE**	.080	0.263
SE \times SF	.030	-0.160
SE \times RS**	.184	0.354
SF \times HE**	.084	0.199
SF \times RS**	.186	0.346
SF \times HE \times SE	.092	-0.294
RS \times SE \times HE	.200	0.113
RS \times SF \times HE	.200	0.105
Illness in the past 12 months**	.036	9.915
Migraine**	.088	7.118
Age*	.047	-0.763

Notes. *significant at .05, **significant at .01; ORS—organizational role stress, SE—self-efficacy, HE—hazard exposure, SF—situational factors, RS—role stagnation.

3.4. Analysis of Variance

One-way analysis of variance (ANOVA) was performed to assess possible differences in burnout among the different wards. Analysis showed a significant ($p < .01$) difference in the means of the three groups (inpatient, outpatient and ICU) (Table 5).

Post-hoc analysis using Tamhane's test demonstrated that nurses in inpatient departments had significantly higher burnout scores than those in outpatient services ($p < .01$). The same could also be said regarding ICU nurses. Therefore, among the three groups, those in the outpatient

TABLE 5. Analysis of Variance (ANOVA) Between Burnout and Ward Assignments

ANOVA Between Burnout and Ward Assignments	SS	F	Significance
Between Groups	1720.343	8.192	.000
Within Groups	13755.896		

TABLE 6. Multiple Comparisons Using Tamhane's T2

Interactions Between Ward Assignments	Mean Difference	SE	Significance
Inpatient × outpatient	8.8961	2.13404	.000
Inpatient × ICU	−1.1948	2.03774	.914
Outpatient × ICU	−10.0909	2.33989	.000

Notes. ICU—intensive care unit.

services had the least burnout. ICU patients had more burnout than those in the inpatient department but this difference was not found to be significant (Table 6).

4. DISCUSSION

Burnout has been the subject of various investigations aiming at elucidating and disentangling the complex relationships and interactions that moderate and influence it. In this study, we have determined that a significant correlation exists between burnout and SE, HE and ORS. Furthermore, ORS alone has been identified as a predictor of burnout, along with age and illness. Acting together, some of the other measured indices also displayed significant predictive capacities. These point out the interactions present among these factors as they exert their effect on burnout.

Some researchers have also looked into the work-related aspects of burnout. Cherniss [28] conducted interviews with public human services professionals and found that mistrust, organizational conflict, rigid role structure, isolating work practices and entrenched patterns of uncommunicative social interaction were a source of burnout among these workers. Other identified sources of burnout included employment insecurity and casualization of

the workforce, issues with management and the system, difficulties with the nature of work, inadequate resources and services, problems with doctors, aggressive and criminal consumers, undervaluing consumers and nurses, physical and emotional constraints of the workplace, nurse–nurse relationships, horizontal violence [29], lack of adequate staffing, dealing with physically threatening, difficult or demanding patients [30], increased workloads, scheduling conflicts, high demands, lack of hospital equipment and resources, and uncertainty about funding [11]. These organizational factors are particularly important in PGH and Philippine setting due to the continued exodus of nurses to greener pastures abroad, resulting in the shortage of qualified nurses.

In this study, it was found that levels of burnout varied among nursing departments. Schraub and Marx [31] also reported a higher level of burnout among oncologists as compared to AIDS medical or palliative care staff. Imai, Nakao, Tsuchiya, et al. [32], on the other hand, found a higher prevalence of burnout among community psychiatric nurses than public health nurses engaged in other services.

Burnout was also found to be correlated with physical symptoms such as migraine, sleep disorders and diarrhea. Özgencil, Ünal, Oral, et al.'s [33] findings were similar: burnout was associated with increased prevalence of depression among ICU nurses. Dorz, Novara, Sica, et al. [34] also found correlations between burnout, depression and anxiety.

This study adds some new information on the sources of burnout. It shows that the phenomenon is determined not by individual events but rather by their interaction. In addition, it takes into account not only previously analyzed causes of burnout, such as work overload, or role conflict, but also causes that have not been discussed in this context yet, such as role erosion, inter-role distance and others.

Based on the various correlation statistics done to look into the association between burnout and risk factors, the summative equation is

$$\text{burnout} = .306 \text{ ORS} + .236 \text{ SE} \times \text{HE} + .346 \text{ SF} \times \text{RS} + .199 \text{ SF} \times \text{HE} - .763 \text{ age,}$$

where ORS—organizational role stress, SE—self-efficacy, HE—hazard exposure, SF—situational factors, RS—role stagnation.

The equation shows the following.

1. Rarely do individual factors taken in isolation affect burnout. In this case, it is only ORS as a composite dimension.
2. Factors affecting burnout among nurses in this study usually interact to cause burnout. For instance, there is an interaction between lack of SE with HE. Other factors include interaction between unsupportive factors at work (SF) and RS (absence of promotion or work variety); between unsupportive work situations and HE.
3. Age has a very significant effect on burnout. The study shows that younger nurses are more at risk of burnout. A probable explanation is that the young may be more idealistic, more uneasy with routine work and may be considering working abroad. The reasons for such findings may be looked into in other research.
4. The findings of this research can be generalized since the selection of subjects was randomly done, and appropriate statistics have been done to analyze factors associated with burnout.

The contribution of the study is seen in advancing new concepts in the already existing framework of burnout, and thus, in assisting nurses and hospital administration in controlling that phenomenon. In reality, factors such as age, SE, organizational stress factors, and situational analysis all interact in varying degrees in the attribution of burnout. Solutions therefore should be multidimensional and involves the individual, organizational factors and work conditions.

This study has included a new concept on hazard exposures that may be associated with burnout. In a developing world setting where resources are limited, employees and workers may be well exposed to certain work hazards, and in the nursing profession, these may include biological, ergonomic and physical hazards. Exposure to multiple hazards may aggravate burnout as shown in this study.

This study has used various concepts related to burnout, both from developing and developed countries, in an attempt to see the contribution of these risk factors to burnout among Filipino nurses. The inclusion of these concepts with corresponding scales and dimensions broadens our understanding of factors associated with burnout and, thus, helps manage burnout among nurses. This is seen as a significant contribution in the Philippine society since the turnover rate of nurses is high in government hospitals where they are most needed, and many Filipino nurses go abroad to work.

Information dissemination among the nurses involved in the study is planned where experts in occupational health, psychology and job satisfaction will give provide education on how to manage and control burnout in the workplace.

5. CONCLUSION

This study has shown that burnout is correlated with ORS, HE and personal factors such as SE, age, work experience and health status. This implies that organizational, personal and occupational factors interact in mediating the development of this condition. In addition, ORS, illness and age have been found to be independent predictors of burnout. Acting together, SE and HE, SE and ORS, and SF and HE are also significant predictors ($p = .000$, $.002$ and $.005$, respectively). Furthermore, nurses in inpatient departments and ICUs had significantly higher burnout scores than those in outpatient services ($p < .01$).

In light of these findings, we can now target specific areas for possible intervention. The significance of personal factors in the development of burnout signifies that individually targeted modalities such as counseling, enhancement of coping skills, meditation and health promotion may be effective modalities for intervention. Techniques that modify organizational and work-related factors such as occupational monitoring for work hazards, skills and management training, proper assignment to duties and shifting schedules, and improving and maximizing hospital resources are also promising

possibilities. Further investigation is still needed to assess the suitability and feasibility of such interventions in the nursing workplace, especially in large tertiary hospitals.

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