

**A STUDY OF BURNOUT AND STRESSOR  
RELATED FACTORS AMONG NURSES  
CARING FOR CHILDREN IN  
HOSPITAL UNIVERSITI SAINS MALAYSIA**

**DR. SITI FATIMAH BINTI ABU HUSSAIN**

**DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF MEDICINE  
(PAEDIATRICS)**



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**CHAPTER I:**  
**THE PRELIMINARIES**

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## ABBREVIATIONS

USM	Universiti Sains Malaysia
CBI	Copenhagen Burnout Inventory
GSQ	General Stressor Questionnaire
SSU	Soalselidik Stresor Umum
NICU	Neonatal Intensive Care Unit
SCN	Special Care Neonatal
IQR	Interquartile Range
OR	Odd Ratio
CI	Confidence Interval
SD	Standard Deviation
ADJ	Adjusted
ID	Identification Data

## ABSTRAK

**Objektif:** Tujuan kajian adalah untuk mengkaji kekerapan ketegangan (lesu upaya) dan korelasi antara skor ketegangan (lesu upaya) dan skor domain stres dan untuk menentukan hubungkait antara faktor sosiodemografi dan pekerjaan berkaitan dengan ketegangan (lesu upaya) dalam kalangan jururawat yang menyediakan perkhidmatan perubatan untuk kanak-kanak di Hospital Universiti Sains Malaysia (Hospital USM).

**Bahan dan Kaedah:** Ini merupakan kajian rentas dengan menggunakan soal selidik dwibahasa yang sah; Soalselidik Stresor Umum (SSU) dan Copenhagen Inventory Burnout (CBI) yang dijalankan dalam kalangan jururawat yang menyediakan perkhidmatan perubatan untuk kanak-kanak di Hospital USM khususnya di wad dan klinik. Kesemua 159 jururawat yang layak telah direkrut dan 157 soalselidik yang lengkap telah dianalisa. Statistik deskriptif digunakan untuk semua pemboleh ubah yang dikaji. Analisis korelasi Pearson digunakan untuk mengkaji korelasi manakala regresi logistik mudah dan regresi logistik berganda digunakan untuk mengkaji hubungkait.

**Keputusan:** Kekerapan ketegangan (lesu upaya) dalam kalangan jururawat yang menjaga kanak-kanak di Hospital USM adalah 28.7% (95% CI = 21.6, 35.7) dengan majoriti mereka mengalami ketegangan (lesu upaya) peribadi (49.7%, 95% CI = 41.9, 57.5). Terdapat hubungkait yang sederhana positif antara skor domain stres dan skor ketegangan (lesu upaya) keseluruhan dengan nilai p adalah  $<0.05$ . Penempatan kerja dan kekangan

birokrasi telah dikenalpasti sebagai faktor penyumbang utama yang menyebabkan keseluruhan ketegangan (lesu upaya).

**Kesimpulan:** Ketegangan (lesu upaya) dalam kalangan jururawat yang menyediakan perkhidmatan perubatan untuk kanak-kanak di Hospital USM perlu diberi perhatian terutamanya berkaitan ketegangan (lesu upaya) peribadi. Faktor utama yang berhubungkait dengan ketegangan (lesu upaya) adalah penempatan kerja dan kekangan birokrasi. Oleh itu, ketegangan (lesu upaya) dalam kalangan jururawat yang memberi penjagaan kepada kanak-kanak mesti ditangani dalam meningkatkan kesejahteraan psikologi mereka.

**Kata kunci:** ketegangan (lesu upaya), tekanan, jururawat, kanak-kanak, pediatrik

## ABSTRACT

**Objective:** The aim of the study is to determine the prevalence of burnout and correlation between burnout score and stressor domain score and to determine the association between sociodemographic and occupational related factors with overall burnout among nurses caring for children in Hospital Universiti Sains Malaysia (Hospital USM).

**Materials and Methods:** This was a cross-sectional study using bilingual validated questionnaire; the General Stressor Questionnaire (GSQ) and Copenhagen Burnout Inventory (CBI) conducted among nurses providing medical service for children in Hospital USM particularly in wards and clinic. All 159 eligible nurses were recruited and 157 completed questionnaires were analysed. Descriptive statistics were examined for all variables under study. Pearson's correlation analysis was applied to study the correlation while simple logistic regression and multiple logistic regressions were applied to study the association.

**Results:** The prevalence of burnout among nurses caring for children in Hospital USM was 28.7% (95% CI = 21.6, 35.7) with the majority of them experienced personal burnout (49.7%, 95% CI = 41.9, 57.5). There was a significant moderate positive correlation between different stressor domain score with an overall burnout score with p-value < 0.05. Work placement and bureaucratic constraints were identified as the main contributory factor leading to overall burnout.

**Conclusion:** Burnout among nurses providing medical services for children in Hospital USM is of concern especially involving personal burnout. The main stressor related factors of burnout were work placement and bureaucratic constraints. Therefore, burnout among nurses providing care for children must be addressed in order to enhance their psychological wellbeing.

**Key words:** burnout, stressor, nurses, children, paediatric

**CHAPTER II:**  
**THE TEXT**

**Section A:**  
**Introduction**

## **INTRODUCTION**

### **LITERATURE REVIEW**

Burnout is defined by the Merriam-Webster Dictionary as exhaustion of physical or emotional strength or motivation as a result of prolonged stress or frustration (1). It was first described in 1974 by the clinical psychologist Herbert Freudenberger. Burnout among health care providers has become one of the major issues nowadays. The World Health Organization has recognized burnout as a serious health issue by recently declaring burnout as an “occupational phenomenon” in the International Classification of Diseases, 11th revision (ICD-11) (2). It is common but reversible and preventable.

Burnout and job stress are crucial issues for health care professionals because they imposed significant risk to their health and well-being (3). As medical care becomes more technical and patient care is getting more complex, the issue of burnout becomes progressively more relevant to the physical, emotional well-being as well as the morale of the health care providers (4).

Burnout can negatively impact one’s personal life, the quality of patient care and the healthcare organization. Due to these matters, researchers have developed several tools to assess the severity of burnout. The famously used worldwide are Copenhagen Burnout Inventory (CBI) and Maslach Burnout Inventory (MBI). In this study, we adopted CBI to assess burnout and the questionnaires assess three main aspects of burnout which are personal burnout that refers to the degree of physical and psychological fatigue and exhaustion experienced by the person (5), work related burnout that refers to the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his or her work (5) and client-related burnout that refers



to the degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his or her work with clients (5).

Burnout has reached rampant levels among health care professionals and nurses, particularly those who are at high risk of burnout. The burnout epidemic is detrimental to patient care and may exacerbate the impending health care provider shortage. Paediatric health professionals who become overly involved are at even greater risk of experiencing psychological distress (6).

A systematic review and meta-analysis on prevalence of burnout among nurses worldwide using 8 academic research databases with 113 studies for systematic review and 61 studies for the meta-analysis, consisting 45,539 nurses worldwide in 49 countries across multiple specialties were conducted in 2019 showed that an overall pooled-prevalence of burnout symptoms among global nurses were 11.23%. Paediatric nurses had the third highest burnout symptoms prevalence rates among all specialties with 11.74% (95% CI = -5.96, 29.44) (2). Similarly, a study conducted in Taiwan also revealed that among medical personnel, nurses have the highest work related burnout with a prevalence of 66% (7).

A systematic review and meta-analysis on prevalence of burnout among nurses in Iran by Rezaei et. al in 2018 showed that overall prevalence of burnout among Iranian nurses was estimated to be 36% (95% CI = 20, 53) (8). Another study conducted in Turkey among 106 nurses reported that high risk levels of secondary traumatic stress existed among 40.6% participants (9). Locally, Huda, B.Z. (2018), conducted a cross sectional study among 509 nurses working in Hospital Serdang and showed that the proportion of nurses with burnout was 24%, with 61.9% had personal burnout (10).

The nursing profession demands high levels of social responsibility. Problems that can arise on a daily basis includes work overload, lack of autonomy or authority to make decisions, and difficulty in reconciling family life and work. All of these factors can trigger burnout syndrome, generating psychological-related symptoms such as depression, anxiety, fatigue, sleep disorders, irritability or substance abuse (11).

Burnout is resulted from excessive and prolonged stress. Stressor is defined by the Merriam-Webster Dictionary as a stimulus that causes stress (1). Stressor has a major influence upon mood, our sense of well-being, behavior and health. In this study, stressor was assessed using the General Stressor Questionnaire (GSQ) consisting of 28 questions with 7 domains, which were the family, poor relationship with superior, bureaucratic constraint, work-family conflicts, poor relationship with colleagues, performance pressure and poor job prospect (12).

The main attributed stressors towards nurses' job are related to personal and working environment. The personal factors include lack of family support and poor coping mechanism in dealing with the emotional burden with patient's poor prognosis. Meanwhile, high magnitude of workload, dysfunctional relationship with other clinical staff, burdensome shift working and lack of supportive relationship with colleagues and supervisors contribute to stressor-related working environment (13, 14).

Similarly, a study conducted among Chinese nurses in Hong Kong also found that major stressor of burnout was nursing related issues that accounts for 38.1% and mainly due to work overload and inadequate staff (15).

There are a few sociodemographic and occupational related factors identified as the potential source of burnout as seen in the previous studies. According to a systemic review and meta-analysis published in 2018 by Pradas et al, marital status was associated with lower levels

of burnout, while age was inversely related to burnout levels, with younger nurses being more prone to burnout (16). The previous study was in contrast to a study conducted among Muslim nurses caring for chronically ill children in Turkey where they reported that those over the age of 40 years were at greater risk with p value of 0.003. However, there were no statistically significant differences in terms of education, number of years as nurse or number of years of experience with children (9). Another study conducted in Jordan using the Maslach Burnout Inventory reported that in relation to demographic traits, female nurses had higher levels of emotional exhaustion and depersonalization and lower levels of personal accomplishment than male nurses. This study also revealed that high level of burnout were positively associated with an increase in age and nursing experience (17).

The aim of our research were to study the prevalence of burnout and stressor related factor among nurses caring for children in Hospital Universiti Sains Malaysia. The specific objectives are to determine the correlation between burnout score and stressor domain score and to determine the association between sociodemographic and occupational related factor to overall burnout among nurses caring for children in Hospital Universiti Sains Malaysia.

Ultimately, the findings of this study would be a resourceful guide in the development of stress management intervention in improving the psychological well-being of nurses caring for children.

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**Section B:**  
**Study protocol**

**Documents submitted  
for ethical approval**

**Research title: A Study of Burnout and Stressor Related Factors among Nurses Caring for Children in Hospital Universiti Sains Malaysia**

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Associate Professor Dr Azizah Binti Othman

**Introduction**

This study is to determine the prevalence of burnout and the stressor related factors among nurses providing medical services for children in Hospital Universiti Sains Malaysia.

Burnout is defined by the Merriam-Webster Dictionary as exhaustion of physical or emotional strength or motivation as a result of prolonged stress or frustration. Burnout among health care providers has become one of the major issue nowadays. It is common but reversible and preventable.

Burnout and job stress are important issues for health care professionals because they cause significant risk to their health and well being (Simpson & Grant, 1991). As medical care becomes more technical and patient care more complex, the problems of burnout become increasingly more relevant to the physical and emotional well-being as well as the morale of the medical staff (Kash et al., 2000). Pediatric health professionals who become overly involved are at an even greater risk of experiencing psychological distress (Maytum et al., 2004).

**Problem statement & Study rationale**

Burnout can result in serious negative impact on a personal life, affect the quality of patient care and eventually affecting the healthcare organization as a whole.

However, there is limited information on the level of burnout and stress among nurses caring for children in the local setting.

This study will focus on the prevalence of burnout among nurses caring for children and hoped to identify the common stressor related factors.

Ultimately, the findings of this study will be a resourceful guide in the development of stress management intervention in improving the psychological wellbeing of nurses caring for children.



### **Research Question(s)**

1. Does nurses caring for children in Hospital Universiti Sains Malaysia suffer from burnout and what is the prevalence?
2. What are the common stressors related factors and its correlation with burnout?
3. Does sociodemographic and occupational related factors associated with burnout?

### **Objective**

#### **General:**

1. To study the prevalence of burnout and stressor related factor among nurses caring for children in Hospital Universiti Sains Malaysia.

#### **Specific:**

1. To determine the prevalence of burnout among nurses caring for children in Hospital Universiti Sains Malaysia.
2. To determine the correlation between stressor domain and burnout among nurses caring for children in Hospital Universiti Sains Malaysia.
3. To determine the association between sociodemographic and occupational related factor with burnout among nurses caring for children in Hospital Universiti Sains Malaysia.

### **Literature review**

Neslihn Partlak Günüşen, Marian Wilson and Burcu Aksoy conducted a cross sectional survey and interviews regarding *Secondary Traumatic Stress and Burnout among Muslim Nurses Caring for Chronically Ill Children in A Turkish Hospital* and was published in 2018. They interviewed 106 nurses using the Professional Quality of Life Instrument and Maslach Burnout Inventory. The interviews was conducted with a subgroup of eight participant to explore the nurses' experiences and coping strategies related to caring for chronically ill paediatric patients. The result showed high risk levels of secondary traumatic stress existed among 40.6% participants and those over the age of 40 years were at greater risk with p value of 0.003. However, there were no statistically significant differences in terms of education, years as nurse or years of experience with children.

Grunfeld et al conducted a study that was later published in 2000 on *Cancer Care Workers in Ontario: Prevalence of Burnout, Job Stress and Job Satisfaction*. A questionnaire was mailed to all 1016 personnel of the major providers of medical oncology services in Ontario. The questionnaire consisted of the Maslach Burnout Inventory, the 12-item General Health Questionnaire and a questionnaire to determine

job satisfaction and stress. From this study, the prevalence of emotional exhaustion were significantly higher among the physicians (53.3%) than among the allied health professionals (37.1%) and the support staff (30.5%) with  $p \leq 0.003$ . The same was true for feelings of depersonalization with 22.1%, 4.3% and 5.5% respectively and significant  $p \leq 0.003$ .

Another study regarding burnout and job stress among nurses was done by Bagaajav, et al. The research was published in 2011. Their study regarding *Burnout and Job Stress among Mongolian Doctors and Nurses* and identified the factors influencing their burnout. A self-administered questionnaire using Copenhagen Burnout Inventory (CBI) and Effort-Reward Imbalance (ERI) model was conducted among 180 doctors (45.9%) and 212 nurses (54.1%) resulted in a response rate of 87%. Burnout was measured by the Copenhagen Burnout Inventory (CBI) in three scales: personal burnout, work-related burnout, and client-related burnout. Compared with the prior studies of hospital staffs in other countries, doctors and nurses in Mongolia had relatively higher burnout rates, with personal, work-related and client-related average scores of 45.39, 44.45, and 32.46, respectively.

In addition, Kash et al studied on *Stress and Burnout in Oncology* that was published in 2000. A total of 261 staff participated in this 2 years period study survey: 76 house staff, 102 oncologists and 83 nurses was interviewed using the Maslach Burnout Inventory. An analysis of variance found that house staff reported significantly higher levels of emotional exhaustion (mean = 34.03) than did all other groups ( $P < .0001$ ).

In 2018, Rezaei et al conducted a systematic review and meta-analysis on *Prevalence of Burnout among Nurses in Iran*. They reviewed 21 selected articles with 4180 participants from English and Persian language studies that was published between 2000 and 2016 and the overall prevalence of burnout among Iranian nurses was estimated to be 36% [95% confidence interval (CI), 20–53%].

**Locally, Huda Zainuddin conducted a cross sectional study in 2018 among 509 nurses working in Hospital Serdang through simple random sampling using validated self-administered questionnaires that consists of Perceived Stress Scale (PSS-10) and Copenhagen Burnout Inventory (CBI). Her study on *Burnout And Its Associated Factors Among Nurses In A Tertiary Hospital, Malaysia* showed proportion of nurses with burnout were 24%, whereby 61.9% had personal burnout, 30.8% work related burnout and 11.2% patient related burnout. Burnout had a significant association with working experience ( $p= 0.0039$ ), working area ( $p= 0.047$ ), work related stress ( $p=0.001$ ), work schedule ( $p=0.003$ ) and job satisfaction ( $p=0.001$ ).**

**In another local study conducted by Mustafa & Gim using Maslach Burnout Inventory on the *Prevalence and Levels of Burnout among Nurses in Hospital Raja Perempuan Zainab II Kota Bharu, Kelantan* published in 2015**

**showed that among 60 respondents, 5.0% showed a high level of Emotional Exhaustion while 95.0% were at the moderate and mild level. Respondents with a high level of Depersonalization constitute 3.3% while 96.7% were at a moderate and mild level. Analysis show that 48.2% are at the high and moderate level for Personal Accomplishment while 51.7% is still at the lower level. Mean score for Personal Accomplishment 33.53 as oppose to Emotional Exhaustion 15.90 and Depersonalization 3.60 indicate a low level of burnout characteristic among the staff nurses.**

### **Research design**

This is a cross sectional study using validated questionnaire; the General Stressor Questionnaire (GSQ) and Copenhagen Burnout Inventory (CBI).

### **Study area**

This study will be conducted among nurses providing medical service for children in Hospital Universiti Sains Malaysia particularly in wards and clinic.

**The study is conducted in Hospital Universiti Sains Malaysia in view of the limited time factor and only nurses providing medical services for children are selected as no local study on burnout and stressor related factors among paediatric nurses. Nurses providing care for children required special skills and training especially those in intensive care and oncology unit. They are also prone to emotional attachment to patients particularly those with chronic illnesses and prolonged hospital stay.**

### **Study population**

Reference population – Nurses in Hospital Universiti Sains Malaysia

Target population- Nurses providing medical services for children.

Source population / sampling pool – All nurses working in paediatric wards; medical and surgical based, clinic and neonates ward.

Sampling frame – The list name of nurses working in each ward and clinic.

### **Subject criteria**

#### **Inclusion Criteria**

- Consented
- All ranks of nurses except matron
- Serves in paediatric setting more than 6 months duration

## Exclusion Criteria

- Known psychiatric illness
- Practical nurse

## Sample size estimation

### 1. Sample size for 1<sup>st</sup> objective

$$n = \frac{z^2 p (1 - p)}{\Delta^2}$$

n = minimum required sample

z = value of standard normal distribution = 1.96

Δ = precision = 9%

p = 40.6% (Günüşen et al., 2018)

n = 115

Considering the 10% non response, the minimum required sample is **126**.

### 2. Sample size for 2<sup>nd</sup> objective

Sample size was calculated using PS Software using this formula:-

$$N = [(Z\alpha + Z\beta)/C]^2 + 3$$

\*minimum accepted correlation coefficient is 0.4

### 3. Sample size for 3<sup>rd</sup> objective

Sample size was calculated using PS Software for variable marital status

Survival	t-test	Regression 1	Regression 2	Dichotomous	Mantel-Haenszel	Log
<a href="#">Studies that are analyzed by chi-square or Fisher's exact test</a>						
<b>Output</b>						
<a href="#">What do you want to know?</a>		Sample size				
<a href="#">Case sample size for uncorrected chi-squared test</a>		81				
<b>Design</b>						
<a href="#">Matched or independent?</a>		Independent				
<a href="#">Case control?</a>		Case-Control				
<a href="#">How is the alternative hypothesis expressed?</a>		Two proportions				
<a href="#">Uncorrected chi-square or Fisher's exact test?</a>		Uncorrected chi-square test				
<b>Input</b>						
$\alpha$	0.05	$p_0$	0.618	<input type="button" value="Calculate"/> <input type="button" value="Graphs"/>		
power	0.8	$p_1$	0.4			
		$m$	1			
<b>Description</b>						
We are planning a study of independent cases and controls with 1 control(s) per case. Prior data indicate that the probability of exposure among controls is 0.618. If the true probability of exposure among cases is 0.4, we will need to study 81 case patients and 81 control patients to be able to reject the null hypothesis that the exposure rates for case and controls are equal with probability (power) 0.8. The Type I error probability associated with this test of this null hypothesis is 0.05. We will use an uncorrected chi-squared statistic to evaluate this null hypothesis.						

$\alpha$  = level of significance = 0.05

power = 0.8

$P_0$  = 0.618 (proportion of married nurses without burnout) (Bagaajav et al., 2001)

$P_1$  = 0.4 (expected proportion of married nurses with burnout (Expert opinion)

$m$  = 1 (ratio between nurses with and without burnout)

$n$  = 81

Total sample size = 81 (2) + 10% = **178**

In conclusion, after considering the limitation in achieving the sample size required (see section on sampling method), the minimum **sample size is 126** based on 1<sup>st</sup> objective.

### Sampling method and subject recruitment

**Total number of all nurses working in wards and clinic including neonate up to March 2019 are 166. In view of the limitation of study population, non probability sampling method will be used. Hence, after taking into account the inclusion and exclusion criteria, all eligible nurses during data collection period will be selected.**

### Research tool

1. Socio-demographic per-foma

2. Copenhagen Burnout Inventory (Tage et al., 2005)

- Both English and Malay version will be used for the study

- Comprises of 3 main domains which include personal burnout, work-related burnout and client-related burnout with 19 questions

- 2 type of Likerts scale are used

- 12 questions were rated by the Likerts scale ranged from:

(0) = always

(1) = Often

(2) = Sometimes

(3) = Seldom

(4) = Never/Almost never

- 7 questions were rated by the Likerts scale ranged from:

(0) = To a very high degree

(1) = To a high degree

(2) = Somewhat

(3) = To a low degree

(4) = To a very low degree

- **Reverse scoring is apply in positively worded items. High scores indicated high level of burnout but in this study, mean score will be used for interpretation purposes whereby a mean score of two or more signified significant burnout (Andrew Chin et al., 2017)**

- The Malay version was validated by a study conducted by Chin et al. on *Investigating validity evidence of the Malay translation of the Copenhagen Burnout Inventory* published in 2018.

- **The English version is an open access while the Malay version was approved for research tool (refer attachment – permission letter)**

3. General Stressor Questionnaire (Yusoff et al., 2010)

- Both English and Malay version; Soal Selidik Umum (SSU) will be used

- There is 28 questions consisting of 7 domains, which are family, poor relationship with superior, bureaucratic constraints, work-family conflicts, poor relationship with colleagues, performance pressure and poor job prospect.

- There will be 5 Likerts score:

(0) = causing no stress at all

(1) = causing mild stress

(2) = causing moderate stress

(3) = causing high stress

(4) = causing severe stress

- Higher scores reveals higher level of stress

- The questionnaire was validated by a study conducted by Yusoff & Esa on *The Reliability and Validity of the General Stressor Questionnaire (GSQ) among House Officers* that was published in 2011.

- The English version is an open access while the Malay version was approved for research tool (refer attachment – permission letter)

### Operational definition

TERM	DEFINITION
Burnout	<p>It is define as exhaustion of physical or emotional strength or motivation usually as a result of prolonged stress or frustration.</p> <p style="text-align: right;">(Merriam-Webster Dictionary)</p> <p>In this study, burnout is assess using CBI Questionnaire consisting of 19 questions with 3 domains.</p> <p><b><u>Reverse scoring is apply in positively worded items. High scores indicated high level of burnout. Mean score will be used for interpretation purposes where by a mean score of two or more signified significant burnout.</u></b></p> <p style="text-align: right;">(Andrew Chin RW et al., 2017)</p>
Stressor	<p>It is define as a stimulus that causes stress.</p> <p style="text-align: right;">(Merriam-Webster Dictionary)</p> <p>In this study, stressor is assess using GSQ consisting of 28 questions with 7 domains.</p> <p>Higher scores indicates higher level of stress.</p> <p style="text-align: right;">(Yusoff et al., 2010)</p>
Nurses	<p>All nurses providing medical services for children more than 6months duration in Hospital Universiti Sains Malaysia - the Paediatric ward; General ward 6 Selatan, Surgical ward 2 Selatan, Oncology ward 6 Utara, HDU, NICU and Paediatric clinic</p>
Children	<p>All children since birth till 18years old admitted to the paediatric-based ward and under follow up</p>

## Data collection method

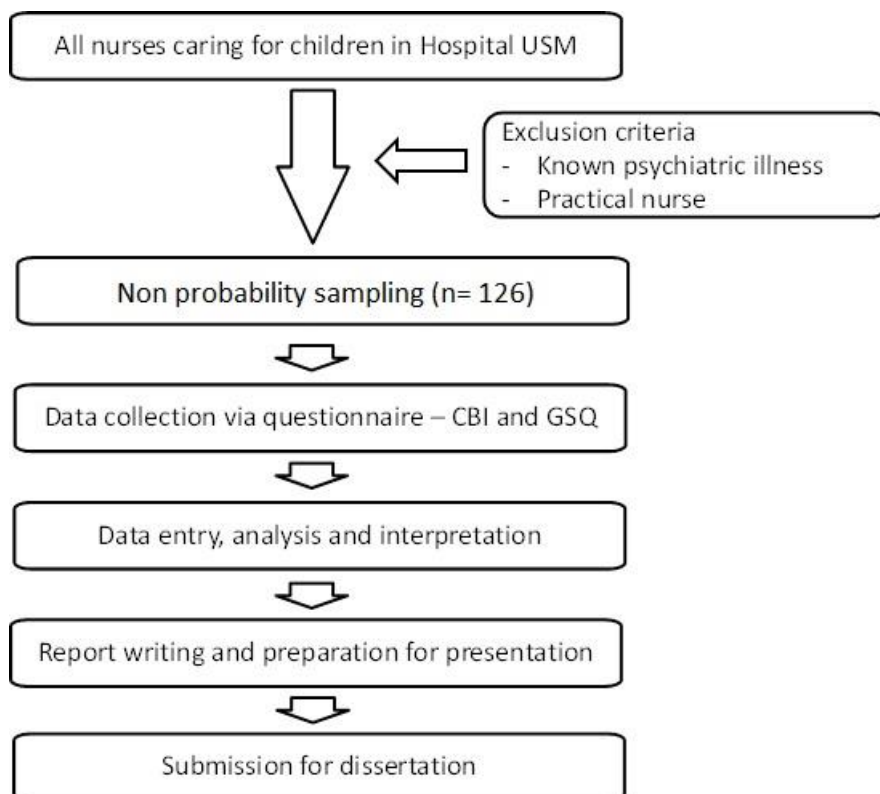
All nurses that fulfill the inclusion criteria will be identified and **the self-administrated** questionnaires will be distributed. **The research will be conducted in the respective ward after informing the ward sister (see section on subject vulnerability). The nurses will be approached in group during each shift or during lunch break for those working on office hour.** Each consented participant will receive explanation regarding the study and related questionnaires used. Bilingual questionnaires will be provided to ensure full understanding about the questions asked and assisting them in answering.

Each participants will spend about 20-25minutes to answer all the questions. There are no specific time allocated but time frame is set in order not to disrupt the ward/clinic work in progress.

Data collection will only use initials to ensure confidentiality. **The form will be collected into a blank folder/collection box placed during the data collection.** Each participant will be assure that the data collected and its result will not be disclosed to others (**see section on privacy and confidentiality**).

Participants will be offer the opportunity to approach the principal investigator privately upon completion of the questionnaire if they have any concern regarding stress or burnout and referral to respective specialty will be done if indicated.

## Study flowchart





## Data analysis

The analyses will be performed using the IBM SPSS Statistics for Windows Version 24.0. The data will be manually entered into the software before the cleaning process takes place. After data has been entered, it will be explored, checked and cleaned.

In this study, **descriptive statistics** will be employed for sociodemographic variables. The findings will be presented based on the types of data and their distribution.

Categorical data will be presented as frequencies and percentage while numerical data will be presented as means and standard deviations if normally distributed, and if not, as medians and interquartile ranges.

**Spearman's correlation analysis will be applied to study the correlation between score of stressor domain and score of burnout.**

**Simple logistic regression and multiple logistic regressions** will be used to study the association between sociodemographics factor and burnout. All probability values are two-sided, and a level of significance of less than 0.05 (p-value < 0.05) will be considered as statistically significant.

JEPeM-USM review Panel and regulatory authorities may review the study data.

## Expected result(s)

Table 1: Sociodemographic of nurses caring for children in Hospital Universiti Sains Malaysia

<b>Variable characteristic</b>	<b>n</b>	<b>%</b>
Age 19-29 30-39 40 and older		
Gender Male Female		
Marital status Single Married Divorced		
If married:- No of children		

If married:- Partner stays together Yes No		
Education level Diploma Degree Master or higher		
Income RM1000 – 3000 <b><u>RM3001 – 5000</u></b> <b><u>RM5001 – 8000</u></b> >RM 8000		
Religion Islam Hindu Buddha Christian Others		
Medical illness		
Years of service < 1 year 1-5 6-10 11 years and more		
Years working in paediatric setting		
Rank/Position Staff nurse Sister		
Current placement General 6s Surgical 2s Oncology 6u HDU NICU Clinic		

<b><u>Work schedule</u></b>		
<b><u>Office hour</u></b>		
<b><u>Shift hour</u></b>		

Table 2: The prevalence of burnout among nurses caring for children in Hospital Universiti Sains Malaysia

<b>Burnout score</b>	<b>n</b>		<b>%</b>
	<b><u>Yes</u></b> <b><u>(≥ 2)</u></b>	<b><u>No</u></b> <b><u>(&lt; 2)</u></b>	
<b><u>Personal burnout</u></b>			
<b><u>Work-related burnout</u></b>			
<b><u>Client- related burnout</u></b>			
<b><u>Overall burnout</u></b>			

**\*\*Notes: mean score of ≥ 2 is regarded as having significant burnout (Andrew Chin et al., 2017)**

Table 3: Factors associated with **overall burnout** among nurses caring for children in Hospital Universiti Sains Malaysia

<b>Variable characteristics</b>	<b><u>Overall Burnout</u></b>				<b>Crude OR (95% CI)</b>	<b>Adjusted OR (95% CI)</b>	<b>p value</b>
	<b>Yes</b>		<b>No</b>				
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>			
Age 19-29 30-39 40 and older							
Gender Male Female							

Marital status Single Married Divorced							
If married:- No of children							
If married:- Partner stays together Yes No							
Education level Diploma Degree Master or higher							
Income RM1000 – 3000 <b><u>RM3001 – 5000</u></b> <b><u>RM5001 – 8000</u></b> >RM 8000							
Religion Islam Hindu Buddha Christian Others							
Medical illness							
Years of service < 1year 1-5 6-10 11 years and more							

Years working in paediatric setting							
Rank/Position Staff nurse Sister							
Current placement General 6s Surgical 2s Oncology 6u HDU NICU Clinic							
<b><u>Work schedule</u></b> <b><u>Office hour</u></b> <b><u>Shift hour</u></b>							

Table 4: Mean score of stressor domain among nurses with and without burnout

Stressor Domain	Burnout		p value
	Yes	No	
	Mean (SD)	Mean (SD)	
Family			
Poor relationship with superior			
Bureaucratic constraints			
Work-family conflicts			
Poor relationship with colleagues			
Performance pressure			
Poor job prospect			