

**STUDY OF THE QUALITY OF LIFE 6 MONTHS  
POST INTENSIVE CARE UNIT DISCHARGE IN  
ABDOMINAL SURGERY PATIENTS**

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## LIST OF ABBREVIATIONS

ADL	Activity of daily living
HRQOL	Health related quality of life
HUSM	Hospital Universiti Sains Malaysia
ICU	Intensive Care unit
QOL	Quality of life
SAPS II	Simplified Acute Physiology Score
SF 36	Short Form (36) health survey
SF 12	Short Form (12) health survey
USM	Universiti Sains Malaysia
WHO	World Health Organization
WHOQoL BREF	World Health Organization Quality of Life – BREF

# PENILAIAN KUALITI HIDUP 6 BULAN SELEPAS RAWATAN ICU DALAM GOLONGAN PESAKIT YANG MEJALANI PEMBEDAHAN ABDOMEN

## ABSTRAK

Dengan peningkatan kos rawatan rapi dan sumber yang terhad, penilaian kualiti hidup selepas rawatan rapi boleh memberi maklumat mengenai kumpulan mana pesakit akan menerima manfaat yang optimum dari penjagaan unit rawatan rapi. Objektif kajian ini adalah untuk mengkaji kualiti hidup 6 bulan selepas discaj dari unit rawatan rapi dan mengenalpasti faktor-faktor berkaitan yang mempengaruhinya. Kajian ini adalah jenis pemerhatian prospektif yang dijalankan di Hospital Universiti Sains Malaysia, Kubang Kerian dari Januari 2016 hingga Disember 2016. Soal selidik WHOQoL-BREF diguna dalam kajian. Kajian menunjukkan sebanyak 52 peserta direkrut, purata umur peserta adalah  $54 \pm 19$  tahun. Lelaki (55.8%) lebih sedikit daripada perempuan (44.2%) dalam golongan jantina. Purata markah bagi empat domain (fizikal, psikologi, hubungan social dan persekitaran) dalam soal selidik WHOQoL-BREF telah melebihi 60%. Umur 60 tahun ke atas mendapat skor yang lebih rendah daripada skor purata dalam empat domain. Selain itu, perempuan dan SAP skor lebih daripada 29 mendapat skor yang rendah dalam domain hubungan social. Kesimpulannya umur lebih daripada 60 tahun adalah faktor yang penting dalam menentukan pesakit yang mendapat skor yang rendah dalam penilaian kualiti hidup selepas discaj dari rawatan rapi.



## QUALITY OF LIFE 6 MONTH POST ICU DISCHARGE IN ABDOMINAL SURGERY PATIENT

### ABSTRACT

With increasing cost of intensive care and limited resources, quality of life assessment post intensive care may provide insight regarding which group of patients will benefit most for intensive care. The objective of the study was to determine quality of life 6 months post Intensive Care Unit discharge and its associated factors in surgical patient. This was a prospective observational study conducted in Intensive Care Unit of Hospital Universiti Sains Malaysia between January 2016 to December 2016. WHOQoL-BREF questionnaire was used in this study. Results showed that a total of 52 participants were recruited, with mean age  $54 \pm 19$  years old and slightly more male (55.8%) than female (44.2%) participants. The mean percentage scores of the four domains (physical, psychological, social, environmental domains) were above 60%. Subjects above 60 years old revealed lower mean score in all four domains of the WHOQoL-BREF questionnaire. Female gender and SAP scores more than 29 have lower than mean score in social relationship domain. The conclusion of this study is that age plays a significant factor in the reduced quality of life post ICU discharge in post abdominal surgery patient.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Mortality and survival rate are traditionally, the main components in post intensive care assessment. However, the trend has changed as the expenses in intensive care are rising and inadequate resources raised questions on the utilization of resources. Intensivists are required to decide who will benefit the most from intensive care for ICU admission. In order to find out which patients will benefit the most, we need to assess the quality of life of survivors. Currently, there is increasing attention that the long-term survival and quality of life of survivors should be incorporated into outcome assessment of intensive care unit.

Not only a patient's post intensive care survival rate is one of the top priorities, the return of patients to their pre-admission level of functional status is equally important. It is pointless if ICU survivors end up with a low quality of life post operation and intensive care. It is demanding to gauge patient's quality of life. There are a few commonly used and approved questionnaires in assessing quality of life, such as short form 36, EuroQol, the Sickness Impact Profile, and WHOQOL BREF .

Calman(1) defined quality of life as narrowing the gap between a patient's hopes and expectations. World Health Organisation (WHO) defined quality of life as "An individual's perceptions of their position in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns."(2). This definition accomplished expectation at the core of understanding about patient agree whether they have a good quality of life. Language and concept of

users are actively incorporated in WHOQOL BREF. Therefore WHOQOL BREF was used (to assess the quality of life of patients) in this study.



## 1.2 Literature review

A study on *Quality of Life after stay in surgical ICU* (3) recruited 375 patients who were admitted into ICU from the period of October 2004 until July 2005. Out of 375 patients only 226 completed the questionnaires (25 died in ICU, 17 died in the ward after discharged from ICU, 38 died before 6 month evaluation, and 69 did not answer the questionnaire).

Clinical variables were recorded on admission: age, sex, body weight and height, ASA status, scheduled or non-scheduled surgery, extent of surgical procedure, ICU and length of stay in hospital, and SAPS II score. The questionnaires used were SF-36, to measure quality of life and Katz Index of Independence in Activities of Daily Living, used to assess ability to independently handle daily activities.

The study concluded that surgical ICU survivors showed optimistic observation of HRQOL 6 months after discharge. Variables such as ASA, age, type of surgery, ICU length of stay, and SAPS II were determinants of HRQOL. Considerable number of patients who were found dependent in at least one activity of the Katz Index could be an indicator of slow recovery among this group of patients.

Another cross-sectional study 'Expecting a good quality of life in health: assessing people with diverse diseases and conditions using the WHOQOL-BREF'(4) involved 4628 participants. The sample contained participants made up of 27 different physical or psychological disease/condition and healthy people. Both WHOQOL-BREF and SF-36 were simultaneously completed by participants. Compared to SF-36, WHOQOL-BREF physical and psychological domains revealed good parallel validity even though

the social domain was weak. This study also concluded that WHOQOL-BREF is a high quality universal tool which is patient focused and appropriated for individual assessment for research and audit.

A study(5) to validate WHOQOL-BREF(Malay) in comparison to WHOQOL-100(Malay) has been conducted in HUSM with total sample size of 200. The results have shown distinctive deficiency specific to certain diseases in WHOQOL-BREF(Malay) was comparable to WHOQOL-100(Malay). Even though WHOQOL-BREF is lengthier compared to SF-12, it encompasses some essential fields that were not available in other questionnaires such as EuroQol and SF-36. This questionnaire is most suitable for epidemiological and intervention studies. Most importantly, Universiti Sains Malaysia has approved this questionnaire validation as the data acquired from WHOQOL-BREF is similar to other participating country.

### **1.3 Problem Statement**

Major abdominal surgery elicits metabolic stress response and inflammation (6). Major surgical intervention is known to result in immune cell alteration with reduction in total T lymphocytes, cytotoxic T cells, and natural killer cell (7-9). These reactions may impair pulmonary function especially in abdominal surgery associated with tissue ischemia (10).

Anaesthesia and post-operative pain management will only partially alleviate the stress response associated with sickness behavior including fatigue and impaired motivation. According to Kelly KW et al (11), this sickness behavior is due to pro-inflammatory acting in the brain and an exaggerated response will impair quality of life. Patients may

be at risk of developing post-operative complication and this will affect short term post-operative quality of life.

#### **1.4 Research Question**

- What is the quality of life in post-discharge ICU patients who underwent abdominal surgery?

#### **1.5 Objectives**

##### **1.5.1 General Objective**

- To determine quality of life of 6 months post ICU discharge abdominal surgery patients.
- To determine the associated factors that affect the quality of life of 6 months post ICU discharge abdominal surgery patients.

##### **1.5.2 Specific Objective**

- To determine quality of life 6 months post ICU discharge patients based on:
  - Physical health domain
  - Psychological domain
  - Social relationship domain
  - Environment domain
- To determine factors that affect these domains

## **1.6 Methodology**

### **1.6.1 Method**

This was a prospective observational study conducted in Intensive Care Unit of Hospital Universiti Sains Malaysia between January 2016 to December 2016. All patients recruited into the study were aged 18 and above, post abdominal surgery, and admitted into Intensive Care Unit. Patients data were traced from Unit Record Hospital USM for demographic data and clinical parameters (Simplified Acute Physiology Score, SAP II) during admission into ICU. Patients were contacted and sessions were conducted in HUSM during clinic follow up. All subjects were briefed on the purpose of the study with 'Borang Maklumat Kajian'. Written consent form 'Borang Keizinan Subjek' were obtained from willing participants. Once consent obtained, WHOQOL-BREF questionnaire was distributed and subjects were required to complete (or assisted by a caretaker) the questionnaire based on patient's report and submit the form. Sample size was calculated using g power for multiple regressions with effect size 0.3 of type I error 0.05, power of 0.8 and number of predictor of 5, giving an estimated sample size of 48. With an estimated dropout rate of 10%, minimum sample size was 48 and maximum size was 53.

### **1.6.2 Ethical Consideration**

This study has obtained ethical approval from The Human Research Ethics Committee of USM [USM/JEPeM/15110497].

### **1.6.3 Inclusion Criteria**

- All patients aged 18 and above with ICU admission from Jan 2016-Dec 2016. If patient admitted several times during study period, only first admission will be included.
- Able to read and understand Malay language
- Admitted into ICU for more than 24 hours
- Post-elective or emergency abdominal surgery

### **1.6.4 Exclusion Criteria**

- Patients aged 17 and below
- ASA 4 patients
- Gynecological procedure
- Urological procedure



### 1.6.5 References

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**CHAPTER 2**  
**MANUSCRIPT**

**2.1 TITLE PAGE**

**Quality Of Life 6 Month Post Intensive Care Unit Discharge in Abdominal  
Surgery Patient**

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## **2.2 ABSTRACT**

With increasing cost of intensive care and limited resources, quality of life assessment post intensive care may provide insight regarding which group of patients will benefit most for intensive care. The objective of the study was to determine quality of life of 6 months post Intensive Care Unit discharge patients and its associated factors in surgical patient. This was a prospective observational study conducted in Intensive Care Unit of Hospital Universiti Sains Malaysia between January 2016 to December 2016.

WHOQoL-bref questionnaire was used in this study. Results showed a total of 52 participants were recruited, the mean age  $54 \pm 19$  years old, with slightly more male (55.8%) than female (44.2%) participants. The mean percentage scores of the four domains (physical, psychological, social, environmental domains) were above 60%. Subjects above 60 years old revealed lower mean score in all four domains of WHOQoL-bref questionnaire. Female subjects and subjects with SAP score above 29 scored lower than the mean score in the social relationship domain. This study has shown that age is a significant factor in the reduced quality of life post ICU discharge in post abdominal surgery patients.

## 2.3 INTRODUCTION

### Background

Mortality and survival rate are traditionally, the main components in post intensive care assessment. However, the trend has changed as the expenses in intensive care are rising and inadequate resources raised questions on the utilization of resources.

Intensivists are required to decide who will benefit the most from intensive care for ICU admission. In order to find out which patients will benefit the most, we need to assess the quality of life of survivors. Currently, (there are ongoing debates that) (there is increasing consideration/attention that) the long-term survival and quality of life of survivors should be incorporated into outcome assessment of intensive care unit.

Not only a patient's post intensive care survival rate is one of the top priorities, the return of patients to their pre-admission level of functional status is equally important. It is pointless if ICU survivors end up with a low quality of life post operation and intensive care. It is demanding to gauge patient's quality of life. There are a few commonly used and approved questionnaires in assessing quality of life, such as short form 36, EuroQol, the Sickness Impact Profile, and WHOQOL BREF .

Calman(1) defined quality of life as narrowing the gap between a patient's hopes and expectations. World Health Organisation (WHO) defined quality of life as "An individual's perceptions of their position in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and

concerns.”(2). This definition accomplished expectation at the core of understanding about patient agree whether they have a good quality of life. Language and concept of users are actively incorporated in WHOQOL BREF . Therefore WHOQOL BREF was used (to assess the quality of life of patients) in this study.

## **2.4 METHODOLOGY**

### **Setting, study design, sample size determination**

This was a prospective observational study conducted in Intensive Care Unit of Hospital Universiti Sains Malaysia between January 2016 to December 2016. All patient recruited into the study were aged 18 and above, post abdominal surgery and were admitted into Intensive Care Unit HUSM.

### **Data collection and processing**

Patients’ data were traced from Unit Record Hospital USM to obtain demographic data and clinical parameters (Simplified Acute Physiology Score, SAP II) during admission into ICU. Patients were contacted and met in HUSM during their clinic follow ups. All subjects were briefed regarding the purpose of the study through ‘Borang Maklumat Kajian’ and written consent form ‘Borang Keizinan Subjek’ were obtained from willing participants. Once consent was obtained, WHOQOL-BREF questionnaire was distributed to the subjects and subjects were required to complete the questionnaire. The questionnaire could also be completed with assistance from the



subject's caretaker, based on the subject's medical report. Subjects were required to submit the form upon completion.

### **Statistical Analysis**

Data entry and analysis of quantitative data were performed using Statistical Package for Social Sciences Software (SPSS) version 22.0. Descriptive statistics, including frequencies, percentages, measures of central tendency and dispersion were calculated for all demographic data and survey subscales. Mean and standard deviation (SD) of decision making subscale scores (rational ability and experiential engagement), leadership styles subscales scores (authoritarian communication, democratic communication, task-oriented styles and relational-oriented styles), and cognitive bias scores were all calculated using descriptive statistics.

The Pearson's correlation coefficient was used to analyze the association between participant's demographic variables and individual subscale scores on decision making, cognitive bias, and leadership styles if data were distributed normally. Spearman correlation test was applied for data that were not distributed normally. Simple linear regression analysis was conducted on decision making subscale mean scores, leadership styles, cognitive bias, and demographic variables. The level of significance ( $\alpha$ ) for all statistical tests in this study were set at  $< 0.05$ .



**Ethical Issues**

Only patients more than 18 years old were recruited. Patients were given full freedom to choose to participate or to not participate without affecting his/her medical care.

There was no conflict of interest with any party. This study has obtained ethical approval from The Human Research Ethics Committee of USM

## 2.5 RESULTS

### Demographic Data

A total of 52 participants were recruited in this study (Table 1). The participant mean age was  $54 \pm 19$  years old. There were slightly more male (55.8%) than female (44.2%) participants. The ASA score of participants ranged from 1 to 4. Most of the patients that were admitted into ICU were ASA 1-2. The mean SAP score was  $39 \pm 15$ . The mean ICU and hospital stay were  $8.3 \pm 15.5$  days and  $23.7 \pm 23.5$  days, respectively. The mean percentage scores of the four domains (physical health, psychological, social relationship, environmental domains) were above 60%.

Table 1: Demographic characteristic of study participants

Variable	N (%)	Mean $\pm$ SD
Age		$54 \pm 19$
Sex		
Male	29 (55.8)	
Female	23 (44.2)	
ASA		
1	19 (36.5)	
2	25 (48.1)	
3	5 (9.6)	
4	3 (5.8)	
SAP II		$39 \pm 15$
Length of ICU Stay (day)		$8.3 \pm 15.5$
Length of Hospital Stay (day)		$23.7 \pm 23.5$

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WHOQOL BREF domains	
Physical Health	67.0±7.5%
Psychology	66.2±8.0%
Social relationships	75.1±11.4%
Environmental	75.0±9.1%

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## 2. Correlation between demographic factors and the four domains of WHOQoL.

Simple linear regression was used to analyse the interaction between demographic variables and the odds of participants having percentage score values above mean value for each WHOQoL domains. Based on Tables 2-5, those aged above 60 showed significant association with the four domains of WHOQoL. Participants with age above 60 revealed lower odds of having WHOQoL values above the mean values in the four domains i.e. physical health, psychology, social relationship, and environment. Table 4 shows that females have higher odds of having better percentage score in the social relationships domain. Patients with SAP II score more than 29 showed reduced odds of having percentage score above mean.

Table 2: Associated factors that affect physical health domain of WHOQOL.

Factor	B (95%CI)	P value
<b>Age</b>		
<60	1	
>60	0.126 (0.036, 0.447)	0.001*
<b>Gender</b>		
Male	1	
Female	1.600 (0.531, 4.818)	0.403
<b>ASA-PS</b>		
I-II	1	
III-IV	0.548 (0.116, 2.578)	0.446
<b>SAP II score</b>		
<29	1	
>29	0.675 (0.196, 2.322)	0.533
<b>ICU length of stay</b>		
<7days	1	
>7days	0.675 (0.196, 2.322)	0.533

Based on table 2, age >60years old are significant factor affect physical health domain

Table 3: Associated factors that affect psychology domain of WHOQOL-BREF.

Factor	B (95%CI)	P value
Age		
<60	1	
>60	0.142 (0.041, 0.487)	0.002*
Gender		
Male	1	
Female	1.750 (0.568, 5.393)	0.330
ASA-PS		
I-II	1	
III-IV	0.378 (0.080, 1.788)	0.220
SAP II score		
<29	1	
>29	0.273 (0.066, 1.135)	0.074
ICU length of stay		
<7days	1	
>7days	0.652 (0.190, 2.238)	0.497

Based on table 3, age >60years old are significant factor affect psychological domain

Table 4: Associated factors that affect social relationships domain of WHOQOL-BREF.

Factor	B (95%CI)	P value
Age		
<60	1	
>60	0.105 (0.025, 0.435)	0.002*
Gender		
Male	1	
Female	3.412 (1.071, 10.872)	0.038*
ASA-PS		
I-II	1	
III-IV	0.439 (0.079, 2.420)	0.344
SAP II score		
<29	1	
>29	0.256 (0.071, 0.931)	0.039*
ICU length of stay		
<7days	1	
>7days	1.150 (0.332, 3.983)	0.825

Based on table 4, age >60 years old, gender and SAP II score are significant factors affect social relationships domain. P value <0.05 is significant.



Table 5: Associated factors that affect environment domain of WHOQOL-BREF.

Factor	B (95%CI)	P value
Age		
<60	1	
>60	0.094 (0.026, 0.343)	0.000*
Gender		
Male	1	
Female	2.449 (0.776, 7.724)	0.126
ASA-PS		
I-II	1	
III-IV	0.378 (0.080, 1.788)	0.220
SAP II score		
<29	1	
>29	0.273 (0.066, 1.135)	0.074
ICU length of stay		
<7days	1	
>7days	0.970 (0.281, 3.348)	0.961

Based on table 5, age >60 years old are significant factor affect environment domain with P value <0.05.

## 2.6 DISCUSSIONS

From the results obtained, age above 60 years old has shown strong association with all 4 domains of WHOQoL (physical health, psychological, social relationship, and environmental). Age above 60 years old have lower than mean scoring in WHOQoL. Aging is commonly associated with reduction in physiological and functional capacity. Mortality rate for elderly >70 years old is 3 times higher than <70 years old that underwent major non-cardiac surgery(12).

For physical and environmental domains, aging has been associated with skeletal muscle atrophy and weakness, reduction in bone mineral density which lead to osteopenia and osteoporosis. Having a sedentary lifestyle post-operation may contribute to lower scores in both domains above. For the psychological domain, it may be due to cerebral atrophy, dendritic loss during aging process that leads to general mental decline. Post major operation may cause post-operative cognitive dysfunction in up to 41.4% of elderly who are >60 years old(13). This condition affects all ages but is more severe and lasts longer in elderly >60years old(14).

Other than age, gender also has an impact on social relationship. In this study, female has a lower score in social relationship domain. This finding is similar to a study done in Austria regarding gender difference in health-related quality of life among elderly. Females, especially aged >70years old, were more likely to live alone or widowed compared to male(15). This might be due to females having longer life expectancies compare to males.(16)

## **2.7 LIMITATION**

A small sample size may limit the power of the study. Combination of prospective study and increasing the duration of follow up such as 3 months, 6 months, or 12 months may yield a better result. Lastly, poor documentation and missing patients files were unavoidable.

## **2.8 CONCLUSIONS**

Age is a significant factor in reduced quality of life post ICU discharge in post abdominal surgery patients.

## **2.9 ACKNOWLEDGEMENT**

I would like to thank the experts panel who were involved in the review of this proposal. Special thanks also to all the staffs in Unit Record Department of Hospital Universiti Sains Malaysia without whom the data would not be available.

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