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Quality of life and its predictors in Thai patients following multiple trauma

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Abstract

Purpose – The purpose of this paper is to describe the quality of life (QOL) and to examine factors predicting the QOL among the demographic characteristics, injury severity, effect on work, pain intensity, disability point, coping and resilience factors, in Thai patients following multiple injuries.

Design/methodology/approach – A cross-sectional research design was used. A total of multiple 106 trauma patients were obtained by simple random sampling. The patients were between 18 and 59 years of age, and had visited an outpatient clinic at one of three randomly selected tertiary hospitals in Metropolitan Bangkok, Thailand. Dependent variable was QOL measured by Trauma Outcome Profile (TOP) questionnaire. Independent variables were demographic and illness-related factors collected from patients' medical records, coping measured by the Jalowiec Coping Scale, pain measured by the Chronic Pain Grade questionnaire (CPGQ) and resilience measured by the Connor-Davidson Resilience Scale (CD-RISC-10). Data were analyzed using descriptive statistics and multiple regression analysis.

Findings – Except for satisfaction, the other nine dimensions of the QOL in patients following traumatic injuries were poor. Pain intensity was the most influential factor predicting the QOL, but the patient's resilience, emotional coping and disability points were also able to predict the QOL.

Originality/value – The TOP, CPGQ and CD-RISC-10 were translated into Thai and used in the current study for the first time. The results of the study revealed that the pain intensity, and the patient's resilience and coping influenced the QOL more than other factors, such as the demographic data and injury severity.

Keywords Quality of life, Pain, Injury, Trauma outcome profile

Paper type Research paper

Background

Multiple trauma is defined as "having at least two severe injuries in different body regions that are potentially life-threatening"[1]. Causes of injury may be from accidents or assault. According to the Thai National Statistics from 2017, the number of multiple trauma patients was 199,113, making the situation a significant health problem. Moreover, multiple trauma incidents are found more in males than in females, especially males aged between 15 and 19 years old, although in females the incidents are more prevalent in the age range of 40–44 years[2]. Due to improvements in emergency care, patients have survived. However, trauma survivors may face many problems. Some experience pain, discomfort, weight loss, fatigue, dyspnea, sleep difficulty, anxiety and/or depression. In addition, they may also suffer from disabilities, respiration limitations, paraplegia or tetraplegia. Those problems can lead to them not returning to work and finally impact on their quality of life (QOL)[3–5].

QOL is one's health status shaped by one's perceptions[6]. Factors influencing an individual's QOL include demographic and illness-related factors (age, gender, pain and disability), psychosocial factors (coping strategies and resilience) and others. For example,

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chronic pain following trauma could be disabling and has a large impact on QOL. Individual resilience could also be an important factor in QOL. Articles pointed toward a negative relationship between resilience and incapacitation, and the progression of illness and QOL[3–5].

Improving QOL should be the ultimate goal in the rehabilitation of patients with trauma. However, in Thailand little is known about QOL, especially in patients with multiple injuries. Most studies have focused on particular regions of injury, including brain trauma[7], spine injury[8] and assaults from acts of terrorism in the south of Thailand[9, 10]. Moreover, many investigators failed to differentiate between patients with one injury and those with multiple injuries, yet multiple trauma patients may have a different illness trajectory and QOL than those with a single injury.

The general aims of this study were to examine the QOL and its predictors after multiple injuries. The predictors underlying the current study were based on literature reviews concerning patients with traumatic injury. In addition, the clinical utility of a new disease-specific QOL measure, the Trauma Outcome Profile (TOP)[11], was used for the first time in Thailand. Also, the Chronic Pain Grade Questionnaire (CPGQ)[12] and the Connor-Davidson Resilience Scale (CD-RISC-10)[13] were employed to measure pain and resilience in Thais for the first time, while the Jalowiec Coping Scale was used to assess the patient's coping strategies[14]. It is expected that the current study would generate new knowledge regarding the QOL and its predictors amongst these patients.

Specific aim of the study

The aim of this paper is to describe QOL and its predictors among multiple trauma patients after being discharged from hospital.

Methods

Participants

A cross-sectional research design was used. We utilized a simple sampling procedure as follows: three tertiary hospitals were randomly chosen from the 15 tertiary hospitals serving Metropolitan Bangkok, patients were selected from these three hospitals by purposive sampling and those selected patients who met the inclusion criteria for the study were recruited into the study until the required sample size was reached.

Inclusion criteria comprised of individuals who had experienced multiple traumatic injuries, were 18–59 years of age at the time of injury, whose time period since the injury was not more than five years, were receiving outpatient treatment (not currently admitted to a ward) and who consented to be part of the study.

Exclusion criteria included pre-injury psychiatric issues, current addiction, diagnosis of a terminal illness, inability to cooperate in the study and an inability to understand and answer the questions.

The sample size was calculated using the G* power software[15] based on an α-value of 0.05, a power of 0.80, an effect size of 0.20 and ten predictors. The minimum predicted required sample size was 106 subjects, and so the data from 106 samples were collected and analyzed in this current study. Data were collected over four months (July to October 2017).

Participants were 106 survivors of traumatic injuries who attended follow-up clinics at King Chulalongkorn Memorial, Phramongkutklao and Vajira Hospitals in Bangkok, Thailand.

Research instruments

(1) Demographic and illness history questionnaire: the questionnaire recorded the participants' gender, age, marital status, education, income and time duration since the injury, length of stay in hospital, employment status, diagnosis, injury location and injury severity (abbreviated injury scale-85)[16].

(2) The TOP was developed by the Working Group of the German Society of Traumatology to assess QOL, specifically in patients with multiple injuries. It could be used as a standardized stand-alone screening measure for trauma patients. It was a reliable and well-discriminating score, covering both general and trauma-specific aspects of QOL and exhibiting clear correlations with already existing scores such as the SF-36[11].

The TOP was directly translated into Thai, with permission for use in this research being granted by the respective authors[11]. It consisted of 57 items evaluating four domains concerning the QOL. The psychosocial domain included depression (four items), anxiety (four items), post-traumatic stress disorder (PTSD) (four items) and social interaction (four items). The physical domain measured pain (two items) relating to 14 different body regions. The functional capacity covered physical functioning (two items), daily activities (four items) and mental functioning (four items). The final domain covered body image (one item) and health satisfaction (one item).

The scale scores ranged from a possible value of 0 (worst possible QOL) to a maximum value of 100 (optimal QOL), where the standardized cut-off point to indicate a normal QOL was above 80 on each subscale. The reliability of TOP in the current study was 0.71.

(3) The CPGQ was designed to evaluate chronic pain levels in individuals who suffered from chronic pain that had lasted for at least six months[12]. Responses on the seven items were used for computing the scores for three subscales: characteristic pain intensity, disability score and disability points.

The characteristic pain intensity score ranged from 0 to 100 and was evaluated by calculating the mean of pain intensities reported for current pain status, as well as the worst and the average pain in the last six months. The disability score (0–100) was based on the mean ratings of how much the pain had interfered with performing activities of daily living (ADL) and work and social activities in the last six months. The disability points were scored at 0–3 and were derived from a combination of ranked categories of the number of disability days (the number of days that the respondent was away from usual activities in the last six months due to pain) and the disability score.

The CPGQ was directly translated into Thai, with permission gained from the respective authors[12], by the researchers of the current study. The reliability of CPGQ in the current study was 0.91.

(4) The CD-RISC was created to address aspects of resilience for use in clinical practice. It was validated in a variety of populations such as Alzheimer's caregivers, adolescents, elders, patients undergoing treatment for PTSD, military medical personnel, medical students, college students, survivors of various traumas, social workers, and also included select professional or athletic groups. Although the means scores vary with settings, the psychometric properties of the RISC held up in almost all studies[13].

The CD-RISC-10 was directly translated into Thai, with permission from the authors[13], granted to the researchers of the current study. The ten items ranged in score from 0 to 40. Higher scores meant that patients had more capacity to overcome adversity. The reliability of CD-RISC in the current study was 0.90.

(5) The JCQ was used to assess the use of coping strategies when dealing with a stressful life event[14]. The instrument was translated into Thai, with permission from the authors, granted to the researchers of the current study. This questionnaire contained 36 items which were divided into the three subscales of problem-focused coping, emotion-focused coping and palliative coping. Patients were asked to respond to a five-point Likert scale ranging from 1 (not used) to 5 (used a great deal).

The scores were computed to get "relative scores." Higher scores meant that patients used more coping strategies. The reliability of the coping questionnaire in the current study was 0.71.

Ethical consecration

The study was approved by the Ethics Committee of the three tertiary hospitals involved in this study (IRB Nos 318/60, COA 101/2560 and 1059/2560). Individuals, and in some cases their family members, were contacted to secure their consent to participate in the study. All participants signed consent forms before enrolling in the study.

Procedure

Data collection was performed at the outpatient departments (OPD). Patients were identified from the OPD chart by staff nurses. If the inclusion criteria were fulfilled and they were willing to participate, then staff nurses introduced the researchers to the patients. The researchers clarified the purpose, benefits, risks and the rights of the patients. Later, the researchers asked them to sign the consent forms and explained how to answer the questionnaires. The researchers also sought permission from the patients to collect data from their medical records. All questionnaires were self-administered. The researchers collected the questionnaires by themselves. There were no missing data in the current study.

Statistical analysis

Descriptive statistics delineated characteristics of demographic data and illness history. Total number and percentages were used for categorical variables and means ± one standard deviation were used for the continuous data. If some data were outliers, the median was also used. Stepwise multiple regression analysis was used, since the factors were selected from literature reviews. Therefore, predictors were entered one at a time, in the order in which the increment to R was greatest. In the current study, the predictors were age, gender, injury severity, pain (three subscales), coping (three subscales) and resilience.

Results

Demographic characteristic of participants

Participants were predominantly male. The mean age of all participants was 37.53 ± 13.54 years with 37.7 percent having completed secondary school. Only 36.8 percent of the samples were able to work completely, while 29.3 percent could not return to work. The mean ISS score was at a moderate level (19.15 ± 11.20). The regions of injuries were mostly to the pelvis and limb. Finally, most participants had experienced injury trauma within the previous year (Table I).

Participants' QOL

In this study, only the "satisfaction" domain was within the normal QOL level (with a mean score higher than 80). In contrast, the participants reported that their other nine remaining domains in the QOL were mostly at a poor level, with mean scores below 80 (Table II).

More than 50 percent of the participants who experienced multiple injuries within the previous year had below normal scores for 9/10 dimensions of their QOL, the exception being the satisfaction dimension. However, more than 50 percent of the participants who experienced multiple injuries between one and five years ago had six domains (PTSD, social interaction, physical functioning, ADL, mental functioning and body image) as below normal (Table III), although care in interpretation is required due to the low sample size of patients who experienced multiple traumas one to three and three to five years ago (Figure 1).

Variables	Participants ($n = 106$) n	%
Gender		
Male	89	84
Female	17	16
Age (years)	37.53 ± 13.54	
Marital status		
Single/divorced/widow	60	56.6
Living with a partner	46	43.4
Education level (highest)		
Primary school	31	29.3
Secondary school	40	37.7
Diploma level	13	12.3
University or higher	22	20.7
Return to work after trauma[a]		
Complete	39	36.8
Incomplete	36	33.9
Did not return to work	31	29.3
Injury severity score (ISS)	19.15 ± 11.20	
Region of injury		
Pelvis	80	75.5
Limb	80	75.5
Head and neck	55	51.9
Spine	50	47.2
Abdomen	50	47.2
Thorax	41	38.7
Skin	22	20.7
Face	21	19.8
Time since trauma injury (years)		
⩽1	76	71.7
> 1–3	11	10.4
> 3–5	19	17.9

Note: [a]All patients were previously employed before the injury

Table I. Participants' characteristics including gender, age, marital status, education level, return to work, injury severity score, injury region and time since trauma injury

Domain of QOL	Mean ± SD	Median ($IQR_{25–75}$)
Depression	77.61 ± 22.66	80.00 (63.92–98.57)
Anxiety	75.47 ± 22.97	81.25 (54.84–98.75)
PTSD	73.20 ± 25.11	77.85 (55.71–97.85)
Social interaction	68.64 ± 25.66	68.75 (56.25–89.06)
Pain	69.83 ± 22.64	73.50 (55.50–90.25)
Physical functioning	63.00 ± 28.73	70.50 (37.75-85.25)
Daily activities	66.73 ± 23.06	67.33 (50.66–86.00)
Mental functioning	68.80 ± 22.77	72.66 (53.33–86.66)
Body image	73.63 ± 30.24	75.00 (68.75–100.00)
Satisfaction	88.25 ± 20.36	97.50 (87.50–98.12)

Note: PTSD, post-traumatic stress disorder

Table II. Descriptives of the QOL in terms of the TOP dimensions

Predictors of the QOL

Descriptive data of the four variables predicting QOL are shown in Table IV.

The multiple regression analysis showed that four independent variables (pain intensity, resilience, emotional coping and disability point) jointly accounted for 48.9 percent of the variance in the QOL assessment of the samples ($R^2 = 0.489$, $F = 24.159$, $p = 0.000$), and so could potentially predict the QOL (Table V).

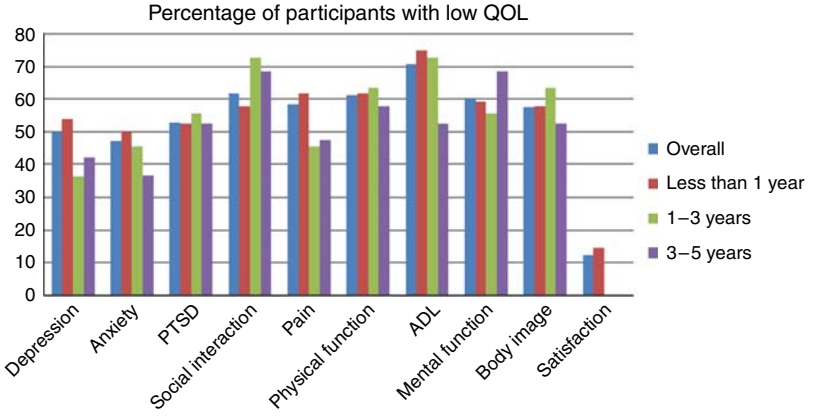
Discussion

The QOL in patients after multiple injuries was examined from the "subjective" points of view of the patients. The TOP, which is a disease-specific scale for assessing QOL, was employed in the current study. The patients reported a normal level of satisfaction. However, lower than normal QOL levels were reported for the pain, physical functioning and daily activities domains. Mental functioning, depression, anxiety and PTSD were all below the normal range, as were the results for social interaction and body image. The results are consistent with previous studies[3, 17–20].

Domain of QOL	Overall ($n = 106$)	Number (%) of participants with low QOL ≤1 year ($n = 76$)	> 1–3 years ($n = 11$)	> 3–5 years ($n = 19$)
Depression	53 (50%)	41 (53.95%)	4 (36.4%)	8 (42.1%)
Anxiety	50 (47.2%)	38 (50.0%)	5 (45.5%)	7 (36.8%)
PTSD	56 (52.8%)	40 (52.6%)	6 (55.5%)	10 (52.6%)
Social interaction	65 (61.8%)	44 (57.9%)	8 (72.7%)	13 (68.4%)
Pain	62 (58.5%)	47(61.8%)	5 (45.5%)	9 (47.4%)
Physical functioning	65 (61.3%)	47 (61.8%)	7 (63.6%)	11(57.9%)
ADL	75 (70.7%)	57(75.0%)	8 (72.7%)	10 (52.6%)
Mental functioning	64 (60.4%)	45 (59.2%)	6 (55.5%)	13 (68.4%)
Body image	61 (57.6%)	44 (57.9%)	7 (63.6%)	10 (52.6%)
Health satisfaction	13 (12.3%)	11 (14.5%)	0 (0%)	0 (0%)

Notes: QOL, quality of life; PTSD, post-traumatic stress disorder; ADL, activity of daily living

Table III.
Number and percentage of patients with multiple injuries where the QOL fell below normal (cut-off point = 80)



Notes: QOL, quality of life; PTSD, post-traumatic stress disorder; ADL, activity of daily living

Figure 1.
Percentage of participants with low QOL compared by time since multiple injuries

Pain intensity and disability points were found to significantly predict an overall negative QOL. Chronic pain following multiple injuries can be disabling, where the pain can adversely affect the patient's lifestyle, discouraging the patients' mobility including essential ADL. The more pain they experienced, the more limited their activities. In addition, patients might depend on caregivers, perceive more anxiety and experience low self-esteem leading to depression[5, 12, 20, 21].

Resilience was found to significantly predict a positive overall QOL. Resilience is defined as the ability to have adaptive responses to adversity, for example, in situations known to be generators of stress associated with multiple injuries. There were three aspects related to the dynamic process of resilience: individuals showed better results than expected, positive adaptation in spite of the experience of stress and a good recovery from the trauma, including adding the evidence of new learning, growth and development as a consequence of the adversity, allowing the individual to be transformed by going through the experience. It is well known to researchers that various protective factors involved in resilience, such as optimism and a positive mood, self-esteem, self-care, independence, social support and reduced anxiety, are influences on health, including through modulating biological processes such as neuroendocrine and immune function[22, 23].

Greater use of emotion-focused strategies significantly predicted a negative overall QOL[24]. Multiple injuries might cause direct and indirect tensions and challenges with which the patients have to cope. Coping was conceptualized as "efforts for both action-oriented and intra-psychic means to manage (i.e. master, tolerate, reduce or minimize) environmental and internal demands and the conflicts among them"[25]. Coping consists of the two dimensions of problem-focused vs emotion-focused dimensions. Problem-focused strategies focus on changing aspects of the environment, facing challenges and seeking solutions, while emotion-focused strategies try to minimize the emotional impact of stress. The ways in which individuals tend to respond to tensions and challenges may modulate the negative impact and consequences of a stressor. In general, problem-focused coping is viewed as being more effective than emotion-focused coping. An efficient way of using coping strategies when chronically ill is associated with a better QOL.

Variables	Range	Mean	SD
Pain intensity	0–100	40.34	24.79
Disability score	0–100	20.58	13.1
Disability point	0–6	3.12	1.94
Problem-focused coping	1–5	3.19[a]	0.94
Emotional-focused coping	1–5	2.22[b]	0.63
Palliative coping	1–5	3.08[c]	0.54
Resilience	0–40	28.54	7.56

Notes: [a]Relative score equal to 0.37; [b]relative score equal to 0.26; [c]relative score equal to 0.36

Table IV.
Descriptive data of four predictors

	b	Se	*β*	*t*	Sig.
(Constant)	845.441	22.365		37.803	0.000
Pain intensity	−2.980	0.473	−0.526	−6.302	0.000
Resilience	5.777	1.533	0.311	3.769	0.000
Emotion-focused coping	−64.013	18.228	−0.285	−3.512	0.001
Disability points	−20.365	6.106	−0.282	−3.335	0.001

Notes: $n = 106$. $R^2 = 0.489$; SE = 102.467; $F = 24.159$

Table V.
Regression analysis of predictors for the QOL

Limitation of the study

First, most patients (71.7 percent) in the study experienced multiple trauma less than one year prior to the study; thus, the results might not be generalized to patients who have experienced long-term effects after trauma. Second, bedridden patients do not normally attend outpatient clinics from which the researchers drew the participants. Finally, another limitation of this study was that the data were restricted by the approach of using a purposive sampling technique. Thus, interpretation of findings should be undertaken with caution.

Conclusion

Based on the findings of this study, health personnel should pay more attention to patients with high levels of pain intensity and more disability points. Also, increased attention must be given to patients who use emotion-focused coping strategies. All these features negatively affect QOL. To improve a patient's QOL, the focus should be on different variables. Psychological interventions focusing on the coping strategies a patient used are necessary for obtaining a better QOL. On the other hand, health care providers should attempt to evaluate a patient's coping strategy. Changing the use of emotion-focused coping strategies into problem-focused coping strategies might help improve their QOL. This would also ensure that health care professionals could better determine how patients deal with their illness and what their perceptions were. Finally, effective pain management in these patients should be considered.

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