



Quality of life after spinal cord injury in Thai individuals: A mixed-methods study

Anchalee Foongchomcheay^{1,*}, Aitthanatt Chachris Eitivipart^{1,4},
Jiraporn Kespichayawattana² and Monticha Muangngoen³

¹*Faculty of Alliance Health Science, Department of Physical Therapy
Chulalongkorn University, Bangkok, Thailand*

²*Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand*

³*Sirindhorn National Medical Rehabilitation Institute, Physical Therapy Unit
Nonthaburi, Thailand*

⁴*Discipline of Exercise and Sport Sciences, Faculty of Health Sciences
The University of Sydney, Sydney, Australia*

**Anchalee.F@chula.ac.th*

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Background: Patients with spinal cord injury (SCI) face various health-related difficulties. Physical limitations and health-related complications in individuals with SCI can lead to activity restrictions and lowering their quality of life (QoL). It is important to assess the QoL in population with SCI to gain more valuable insights into aspects of health-related QoL (HRQoL) that could play a key role in improving care for persons with SCI.

Objective: To quantitatively measure the QoL in persons with SCI in Thailand and expand the results through qualitative investigation to provide meaning, context and depth of “how” and “why” they rated, defined and addressed their QoL in that way.

Methods: The philosophical assumption of this study was set based on the post-positivist views using mixed-methods sequential explanatory design. The quantitative data were collected and analyzed in 101 Thai individuals with SCI using standardized Thai version of the Short Form Health Survey version 2 (SF-36v2), followed by the qualitative investigation of semi-structured interviews in 11 volunteers who participated in the SF-36v2 phase. Priority is given to quantitative data. The data integration occurred at the qualitative data collection through the data interpretation and discussion stage.

*Corresponding author.

Results: With regard to quantitative data, a recent study found a statistically significant difference ($p < 0.05$) in four domains for male and three domains for the female when comparing the SF-36 Thai normative data with SF-36v2 SCI data. Qualitative data revealed that the most salient themes of HRQoL in individuals with SCI were “supporting factors toward QoL” and “driving force post injury”. The integration of the findings revealed that the qualitative data could individually explain and define QoL as well as support quantitative results. The connection of both findings indicated that the higher scores in psycho-social variables and lower scores in physical domains of SF-36v2 in Thai persons with SCI may be due to unique Thai family traditions and community values.

Conclusion: The scores on SF-36v2 and the replies in the qualitative investigation of QoL themes of Thai individuals with SCI were similar to those of other research, but this study is unique in that it specifically represents the Thai socio-environmental-cultural aspects.

Keywords: Spinal cord injury; mixed-methods research; quality of life; Thai.

Introduction

Patients with spinal cord injury (SCI) face various health-related difficulties.^{1,2} These problems, including loss of sensation, the impaired function below the lesion to the spinal cord, increased rate of secondary complications (such as incontinence and pressure sores) and emotional problems (such as depression and anxiety),²⁻⁴ affect them physically and mentally in all aspects of their lives.¹⁻⁴ Recent medical advancements and improved care mean that individuals with SCI have a greater life expectancy after injury⁵; consequently, the primary goal is to enable them to have a satisfactory quality of life (QoL).⁶

QoL is a complicated term, encompassing the individual's physical–psychological health and well-being, social participation, level of independence, and relationships with other people, as well as the substantial characteristics of the vicinities.⁷ Because the different levels of physical limitations and related complications in individuals with SCI can lead to activity restrictions,⁸ it is important to assess the QoL in this population. One of the health-related QoL (HRQoL) instruments most extensively used to evaluate the HRQoL in persons with SCI is the Medical Outcomes Study 36-item Short Form Health Survey, known as the SF-36,⁹ which consists of 36 questions covering eight health domains: physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems and mental health (psychological distress and psychological well-being).¹⁰ These eight dimensions can be collapsed to create a psychometrically reached assessment based on the physical component score (PCS) and

mental component score (MCS). This SF-36 has undergone extensive psychometric validation against different groups,¹¹ including patients with SCI.¹²⁻¹⁵

Many researchers have identified a complicated relationship between HRQoL and physical impairment, showing that there was a significant difference between individuals with SCI and the general population in terms of physical health; however, they found no large differences between these two groups when evaluating perspectives on QoL,¹⁵ possibly because perspectives on physical health and QoL vary between healthy people and people with disability.¹⁶ In addition, QoL in patients with SCI also has a significant association with the presence of secondary complications and the extent of societal participation but not with the level and completeness of injury.¹⁷

These findings suggest that QoL for patients with SCI seems to be a multidimensional structure (for example, personal to national level) influenced by several variables (for example, individual to socioeconomic factors).¹⁶ Therefore, studies that have utilized a single method (qualitative or quantitative alone) to assess QoL in subjects with SCI have found a lack of information regarding some health aspects for subjects recruited in a clinical setting.¹⁸⁻²⁰ Quantitative data alone may only provide an overall statistical picture of QoL while qualitative investigation alone may only enable in-depth investigation of the reasons for QoL to be collected. It is clearly seen that there is a need for more research to bridge the gaps between these health issues using mixed-methods research,²¹⁻²³ in order to increase the comprehensiveness of the overall findings and gain more

valuable insights into the aspects of HRQoL and the interplay among psychosocial variables and physical functioning that could play a key role in improving care for persons with SCI.^{1,18–20,24}

The mixed-methods sequential explanatory design was applied in this study which provides two specific benefits. First, if the quantitative findings yield unexpected results, then qualitative elaboration could be performed to explain those phenomena. Second, non-statistically significant findings from SF-36v2 are generally found between different demographics of interviewees. The research that uses SF-36v2 should be able to identify the reasons behind the difference of QoL scores. The best approach to capture aspects that influence the difference in their QoL scores is by adding qualitative methods into the study.^{1,18–22,24,25}

The purposes of this work were to quantitatively measure the QoL in persons with SCI in Thailand using SF-36v2²⁵ and expand the results through qualitative investigation, using semi-structural interview, to provide meaning, context and depth of “how” and “why” they rated, defined and addressed their QoL in that way.

Methods

This study adopted the post-positivist views²³ as a philosophical assumption and used mixed-methods sequential explanatory design^{21,22} to quantitatively and qualitatively retrieve data regarding the QoL in individuals with SCI in Thailand. The priority was given to quantitative data where qualitative

data provided meaning and context to the initial findings (although more qualitative details were present in this study).^{21–23} To ensure that the qualitative and quantitative aspects of the study were connected, integrated, investigated, and analyzed with rigor, the following processes were adopted. Data analysis was connected and the data integration occurred at the qualitative data collection through the data interpretation and discussion stage.^{22,23} To minimize threats to a study’s rigor, as recommended by Refs. 21 and 22, in a study in which results from the quantitative analysis connected to the qualitative data collection and analysis, the subsequent qualitative interviews were performed in volunteers with SCI who participated in the quantitative SF-36v2. Processes of collecting and analyzing the data were shown in Fig. 1.

Participants

Between March and May 2016, volunteers with SCI from different venues such as Sirindhorn National Medical Rehabilitation Institute (SNMRI), Bangpoo Rehabilitation Centre, the Redemptorist Vocational School for People with Disabilities and the Thai SCI Network were invited to enroll in the present study. To increase the number of participants with SCI, the snowball sampling method was used, with the study coordinator contacting individuals with SCI who were referred by hospital staff together with other volunteers with SCI who also joined the present study. Individuals were eligible to take part in the

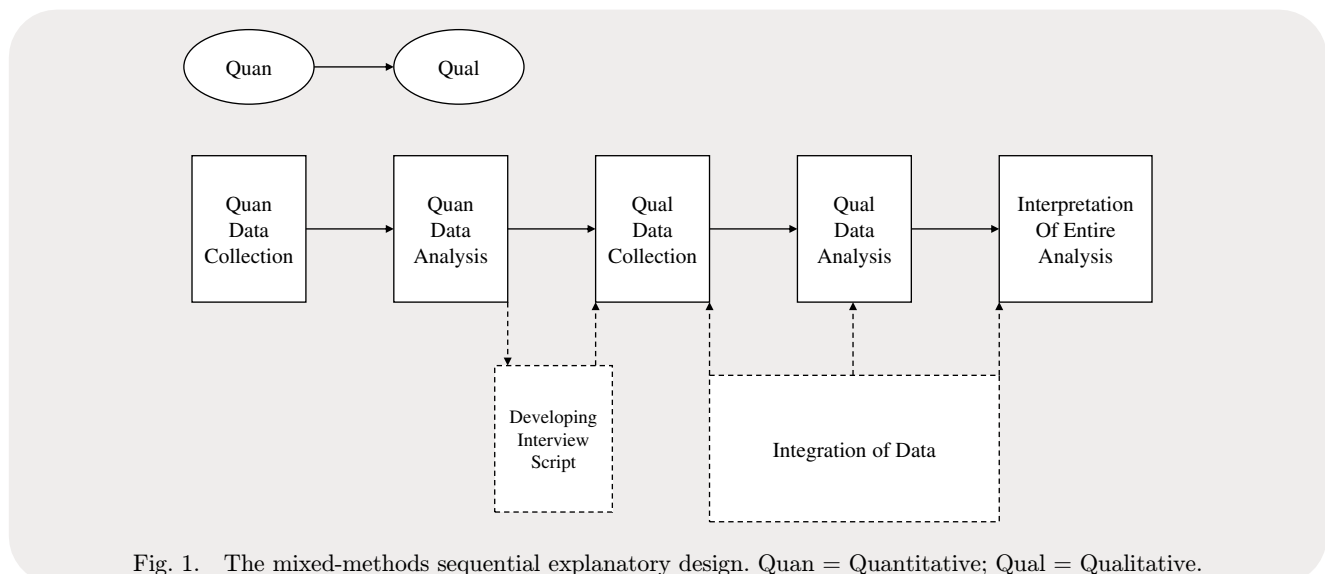


Fig. 1. The mixed-methods sequential explanatory design. Quan = Quantitative; Qual = Qualitative.

research if they (1) were diagnosed as having SCI for more than 12 months (regardless of the cause of injury or the level of completeness), and (2) were able to communicate in Thai. Exclusions were people with a diagnosis of severe cognitive impairment; living in a long-term care facility; or continuing under medical care requiring hospitalization. One hundred and one volunteers with SCI who agreed to participate in the study were contacted by telephone to arrange face-to-face interviews at their convenience using the SF-36v2. All participants with SCI were required to sign the quantitative part of the consent form.

With regard to the qualitative component of the study, of the 101 participants who took part in the SF-36v2 interview, only 11 volunteered to engage in this additional interview (Appendix A). Of these 11 participants, 5 were living in their own accommodation (4 quadriplegias and 1 paraplegia — all employed), and the other 6 were staying at a rehabilitation center or boarding school for the disabled (all were paraplegic patients and unemployed); 8 were male and 3 were female; their ages ranged from 20 to 46; and their average length of time since injury was 8.73 years (between 3 and 26 years). Cause of injury included car accidents, gunshots, falls, and work accidents. They were asked to sign the qualitative part of the consent form before undergoing the semi-structured interview. The study was approved by the SNMRI ethics committee.

Measures and protocol

SF-36v2 questionnaires

The Thai version of the standardized SF-36v2 was used as a standard measure of HRQoL.⁹ The

SF-36v2 examined various perspectives of health comprising function and dysfunction, distress and well-being, and favorable and unfavorable ratings of each individual's overall health status. The eight subscales were Physical functioning (PF; 10 items), Role functioning-physical (RP; 4 items), Bodily pain (BP; 2 items), General health (GH; 5 items), Vitality (VT; 4 items), Social functioning (SF; 2 items), Role functioning-emotional (RE; 3 items), and Mental health (MH; 5 items).¹⁰ The scores were on a scale of 0–100 with higher scores representing more favorable health status.^{9,10} SF-36v2 values of participants from different sociodemographic and disability-related backgrounds were compared.

Semi-structured interviews

For the qualitative part of this study, semi-structured interviews were used to elicit data relating to individuals' perspectives on HRQoL. The prepared questions are shown in Table 1. These questions were modified from the study by Manns and Chad²⁶ in combination with the results derived from the quantitative part of this research in order to gain more understanding of HRQoL in persons with SCI. Therefore, the data integration occurred at this stage throughout the qualitative analysis (Fig. 1). The semi-structured interview allowed participants to discuss each issue freely based on their own experiences.²⁷ This participant-focused approach simplifies exclusive and unexpected insights that fall outside a researcher's pre-prescribed hypotheses and questionnaire-driven queries. In addition, the relaxed and loose structure of the interview enables the interviewer to address a

Table 1. Semi-structured interview guide.

- | | |
|-----|---|
| (1) | How long have you been living with SCI? (Please describe your functional limitations.) |
| (2) | How does the SCI affect your life (and QoL)? |
| (3) | How do you rate your QoL from 0 to 10? (0 means very bad and 10 means excellent) Why do you give yourself those scores? |
| (4) | What do you think the QoL means? And what things are important to your life (and QoL)? |
| (5) | How does SCI affect how good your life is (important parts of your life)? |
| (6) | Does an SCI prevent you from having complete satisfaction in these areas (physical functions, emotional, safe care, relationship with others, occupation, life satisfaction, achievement, social participation and acceptance, traveling and other topics)? |
| (7) | Since injury, how has your life changed or how is it changing? (How do you manage to cope with those changes?) |
| (8) | How has the SCI changed your life, the way you think, the goal in your life and perspective toward your surrounding? |

wide conceptual framework²⁸; for instance, questions were broadly framed around perceived changes in QoL after injury. Open questions — such as “How does the SCI affect your life?” — encourage participants to offer extended responses, therefore providing rich data. In cases where such rich data were not forthcoming, a series of curiosity-driven questions were called to prompt participants to supply further details (e.g., “How did that make you feel?” “Can you tell me more about that?”).²⁷

Interviews were conducted face-to-face by a trained qualitative researcher (AE), in a place which was convenient for the participant. Face-to-face interviews allow the interviewer to build trust between researcher and participant, thereby encouraging the sharing of feelings and sensitive thoughts. In order to encourage participants to elaborate on their personal experience, it is important to establish a quality relationship.²⁷ Interviews lasted between 60 and 80 min and were all digitally recorded and transcribed verbatim. Subsequently, the interview data underwent thematic analysis.²⁸

Analyses

Quantitative analyses

The data from the SF-36v2 questionnaire were analyzed by comparing the SF-36v2 scores of demographic and diagnosis variables of SCI subgroups. HRQoL data were presented as descriptive data including proportions, means and standard deviation (SD) with higher scores on each aspect indicating better HRQoL. Data analysis was conducted using the Health Outcomes Scoring Software version 4.5. The demographic and diagnostic variables between SCI subgroups were tested; independent *t*-tests were used to compare the mean scores between two levels of demographic and diagnostic variables while one-way ANOVA followed by Bonferroni *post-hoc* test was used to compare the mean scores of those variables with more than two levels. Moreover, two-sample *t*-test for mean and SD was used to compare the scores in eight domains of SF-36 Thai normative data²⁹ compared with SF-36v2 SCI data. Analyses were conducted using SPSS statistical software. A significance level of 5% ($p \leq 0.05$) was used for all tests. Any notable trends found in this process were then used to construct semi-structured interview questions, the

results of which were presented within the qualitative results.

Qualitative analysis

Thematic analysis was used to make a systematic exploration of the transcribed data (Appendix B). This method allows a researcher to generate information based on personal experience into conceptual themes from the interviewed data. We adopted a thematic analysis technique used by Braun and Clark²⁸ which involves six phases of data analysis: familiarization with the transcribed data, coding all relevant data, generating potential themes from codes, making a thematic map, defining the themes' names and producing a scholarly report. In principle, when new analytical connections and insights surface during the writing stage, previous phases can be altered accordingly.

Results

Quantitative results

Sociodemographic and disability-related background characteristics of the participants are presented in [Table 2](#). The data were compared and presented even the statistically significant difference was not reached ($p \leq 0.05$). This was due to the nature of SF-36v2 that the lower scores on each aspect already indicating poorer of HRQoL. Therefore, the exploration of non-statistically significant difference data might lead to more insightful of the HRQoL in persons with SCI when combining its results with the qualitative investigation. The gender difference was clear that no statistically significant difference was found in this demographic but in general comparison, women scored higher than men in seven aspects ([Table 2](#)). A comparison of the ages of interviewees revealed that those who were aged 20 years and younger scored the highest with respect to PF, RP, BP (20 years and younger age group scored significantly higher than 20–40 age group, $p = 0.01$), GH and SF while those aged 41 and older scored highest in VT, RE (41 years and older scored significantly higher than 20–40 age group, $p = 0.01$) and MH ([Table 2](#)). Age at injury made a difference when assessing QoL, with those who were injured at a younger age (≤ 20 years old) reporting better scores in all eight SF-36v2 domains (with the only significant high score in PF, $p = 0.009$) ([Table 2](#)).

Table 2. Comparisons of demographic and diagnostic variables between SCI subgroups.

Groups	N(%)	PF Mean (SD)	RP Mean (SD)	BP Mean (SD)	GH Mean (SD)	VT Mean (SD)	SF Mean (SD)	RE Mean (SD)	MH Mean (D)
Gender									
Male	80 (79.21%)	37.38 (21.21)	58.36 (29.59)	55.75 (25.95)	55.70 (21.00)	66.09 (12.61)	74.22 (21.08)	72.81 (27.46)	69.69 (12.92)
Female	21 (20.79%)	38.33 (25.21)	65.48 (29.62)	66.29 (24.94)	59.81 (19.60)	66.67 (17.49)	82.74 (18.32)	82.54 (21.07)	66.43 (19.57)
<i>p</i>		0.860	0.329	0.098	0.421	0.865	0.094	0.156	0.385
Age at time of interview									
(1) Age ≤ 20	7 (6.93%)	42.86 (14.10)	60.71 (30.12)	82.71 (18.54)	71.14 (14.53)	66.96 (9.35)	89.29 (15.19)	81.48 (33.01)	65.00 (15.54)
(2) Age 20–40	69 (68.32%)	40.65 (22.35)	59.06 (26.31)	53.10 (23.14)	55.13 (20.10)	65.58 (13.24)	74.45 (19.93)	70.65 (25.34)	68.47 (15.20)
(3) Age ≥ 41	25 (24.75%)	27.60 (20.16)	61.75 (38.16)	64.36 (30.32)	56.40 (22.76)	67.75 (16.00)	76.50 (23.47)	86.00 (24.26)	71.60 (15.39)
<i>p</i>		[1,2] 1.000 [1,3] 0.297 [2,3] 0.031*	[1,2] 1.000 [1,3] 1.000 [2,3] 1.000	[1,2] 0.010* [1,3] 0.262 [2,3] 0.166	[1,2] 0.155 [1,3] 0.287 [2,3] 1.000	[1,2] 1.000 [1,3] 1.000 [2,3] 1.000	[1,2] 0.060 [1,3] 0.185 [2,3] 1.000	[1,2] 0.298 [1,3] 1.000 [2,3] 0.010*	[1,2] 1.000 [1,3] 0.944 [2,3] 1.000
Age at injury									
Age ≤ 20	39 (38.61%)	44.74 (22.36)	61.86 (26.43)	60.08 (24.54)	58.13 (22.17)	67.47 (10.84)	80.45 (17.40)	79.06 (27.30)	69.10 (13.95)
Age > 20	62 (61.39%)	33.07 (20.65)	58.57 (31.57)	56.60 (26.95)	55.57 (19.83)	65.42 (15.21)	73.19 (22.27)	72.18 (25.78)	68.95 (16.07)
<i>p</i>		0.009*	0.589	0.515	0.547	0.467	0.144	0.120	0.962
Time since injury									
Time ≤ 4 years	26 (25.74%)	31.15 (21.09)	45.19 (32.13)	56.96 (29.32)	58.12 (18.52)	68.03 (16.52)	72.12 (24.83)	68.27 (24.72)	70.19 (14.46)
Time > 4 years	75 (74.26%)	39.80 (21.97)	64.92 (27.09)	58.28 (24.92)	56.01 (21.48)	65.58 (12.60)	77.33 (19.13)	77.11 (26.82)	68.60 (15.54)
<i>p</i>		0.084	0.003*	0.825	0.658	0.435	0.451	0.068	0.648
Neurological classification									
(1) Quadriplegia ASIA A, B, C	22 (21.78%)	16.36 (13.02)	56.25 (35.88)	56.86 (26.34)	55.27 (20.90)	70.46 (17.16)	75.00 (21.48)	77.65 (27.51)	72.50 (15.02)
(2) Paraplegia ASIA A, B, C	64 (63.37%)	40.55 (17.87)	63.57 (27.09)	57.81 (26.99)	55.94 (20.51)	63.38 (11.57)	76.76 (20.64)	73.31 (27.10)	67.89 (15.45)
(3) All level ASIA D, E	15 (14.85%)	56.00 (25.44)	49.17 (28.63)	60.07 (22.27)	61.07 (21.97)	72.08 (13.75)	74.17 (21.37)	77.22 (23.03)	68.67 (14.70)
<i>p</i>		88.89	[1,2] 0.948 [1,3] 1.000 [2,3] 0.272	[1,2] 1.000 [1,3] 1.000 [2,3] 1.000	[1,2] 1.000 [1,3] 1.000 [2,3] 1.000	[1,2] 0.100 [1,3] 1.000 [2,3] 0.073	[1,2] 1.000 [1,3] 1.000 [2,3] 1.000	[1,2] 1.000 [1,3] 1.000 [2,3] 1.000	[1,2] 0.673 [1,3] 1.000 [2,3] 1.000

Table 2. (Continued)

Groups	N(%)	PF Mean (SD)	RP Mean (SD)	BP Mean (SD)	GH Mean (SD)	VT Mean (SD)	SF Mean (SD)	RE Mean (SD)	MH Mean (D)
Employment									
Employed full/part time	27 (26.73%)	33.80 (26.07)	75.75 (29.99)	58.04(26.46)	59.72 (18.28)	69.00 (12.56)	80.50 (20.44)	86.67 (22.57)	68.20 (17.96)
Unemployed/retired/student	74 (73.27%)	38.82 (20.49)	54.61 (27.71)	57.91(25.99)	55.51 (21.43)	65.30 (13.97)	74.51 (20.76)	70.94 (26.62)	69.28 (14.32)
<i>p</i>		0.173	0.009*	0.693	0.529	0.376	0.337	0.003*	0.832
Resident									
(1) Home with PA	40 (39.60%)	36.13 (22.74)	66.25 (29.88)	63.53 (25.97)	58.05(20.92)	69.22 (15.59)	80.63 (20.21)	82.08 (22.29)	70.88 (18.81)
(2) Home without PA	3 (2.97%)	48.33 (22.55)	62.50 (34.80)	34.33 (24.79)	63.00(16.37)	52.08 (13.01)	87.50 (21.65)	66.67 (28.87)	65.00 (5.00)
(3) Disabled institute with PA	6 (5.94%)	20.00 (7.07)	61.46 (32.93)	64.83 (36.80)	62.67 (9.26)	72.92 (16.62)	66.67 (25.82)	54.17 (39.35)	71.67 (12.91)
(4) Disabled institute without PA	52 (51.49%)	40.10 (21.79)	54.57 (28.63)	54.21 (23.95)	54.33 (21.73)	63.94 (10.88)	72.84 (20.07)	72.12 (26.55)	67.50 (12.62)
<i>p</i>		[1,2] 1.000 [1,3] 0.557 [1,4] 1.000 [2,3] 0.407 [2,4] 1.000 [3,4] 0.205	[1,2] 1.000 [1,3] 1.000 [1,4] 0.377 [2,3] 1.000 [2,4] 1.000 [3,4] 1.000	[1,2] 0.358 [1,3] 1.000 [1,4] 0.521 [2,3] 0.571 [2,4] 1.000 [3,4] 1.000	[1,2] 1.000 [1,3] 1.000 [1,4] 1.000 [2,3] 1.000 [2,4] 1.000 [3,4] 1.000	[1,2] 0.204 [1,3] 1.000 [1,4] 0.375 [2,3] 0.175 [2,4] 0.821 [3,4] 0.727	[1,2] 1.000 [1,3] 0.135 [1,4] 0.069 [2,3] 0.279 [2,4] 0.226 [3,4] 0.491	[1,2] 0.262 [1,3] 0.014* [1,4] 0.059 [2,3] 0.644 [2,4] 0.731 [3,4] 0.142	[1,2] 1.000 [1,3] 1.000 [1,4] 1.000 [2,3] 1.000 [2,4] 1.000 [3,4] 1.000

Notes: *The mean scores are significantly different between the levels of demographic and diagnostic variables ($p < 0.05$). [–,–] pair of levels from multiple comparisons.

QoL scores on GH, VT and RE were higher in subgroups with less time since injury (time \leq four years). However, the significant difference was only found in RP where people with SCI who had the higher number of time since injury show higher score than those who had lesser number of time since injury ($p = 0.003$) (Table 2). With regard to the impact of the type of injury, patients with quadriplegia scored higher on RE and MH while patients with paraplegia scored higher on RP and SF, and the scores in other SF-36v2 domains were highest in patients with ASIA score D or E (statistically significant difference found in PF; $p \leq 0.05$) (Table 2). Higher scores were found in five SF-36v2 domains — RP (statistically significant difference found; $p = 0.009$), BP, GH, VT, SF and RE (statistically significant difference found; $p = 0.003$) — among those who were employed (Table 2) while patients with SCI who lived at home with a personal assistant (PA) showed higher scores in RP and RE (statistically significant difference found that home with PA > disabled institute with PA; $p = 0.014$). Higher scores were not found in those who lived in a rehabilitation center, boarding school or disabled institute without a PA (Table 2).

Table 3 compares the scores of eight SF-36 subscales of Thai normative data²⁶ and SF-36v2 SCI data from this study, dividing the data by gender. Women with SCI had lower scores on five SF-36v2 subscales: PF (38.33 versus 72.25, $p = 0.0001$); RP (65.48 versus 83.74, $p = 0.022$); BP (66.29 versus 72.42); GH (59.81 versus 63.72); and MH (66.43 versus 71.06). Men with SCI had lower scores on six SF-36v2 subscales: PF (37.38 versus 72.98, $p = 0.0001$); RP (58.36 versus 79.59, $p = 0.0001$); BP (55.75 versus 68.29, $p = 0.0001$); GH (55.70 versus 63.11, $p = 0.0004$); RM (72.81 versus 73.47); and MH (69.69 versus 70.47). Both men and women with SCI had higher scores on VT and SF (women, $p = 0.0001$) while only women with SCI had a higher score on RE (78.32 versus 82.54).

Qualitative results

The themes that arose from the data were overlapping and interdependent (Fig. 2). Among various topics discussed during the interviews, the following were recognized as being the two most salient themes of HRQoL in individuals with SCI: “supporting factors toward QoL” and “driving force post injury”. The first theme, “supporting

factors toward QoL”, had constituent subthemes of “having a paid occupation”, “having a PA”, “enabling environment”, “stigma” and “self-advocacy”. The second theme, “driving force post injury”, consisted of sub-themes of “self-image”, “freedom mobility” and “dignity and life’s goal”. The sequential exploration of quantitative data is interlaced through these themes. Some data extraction from the transcribed interview was presented in Appendix C.

Supporting Factors toward QoL: This theme comprises a variety of aspects that alter the QoL of individuals with SCI. Many participants acknowledged that these five sub-themes, “having paid occupation”, “having PA”, “enabling environment”, “stigma” and “self-knowledge”, are strongly connected with “what patients with SCI must have to have a good life after injury” and appeared to be the most frequent and potent aspects to arise from the transcripts obtained from the individuals with SCI in this study.

Having Paid Occupation: All persons interviewed reported the importance of having a paid occupation for QoL. Having a job for them meant their financial situation was secure and allowed them an opportunity to be more active.

“I would like to have some work, or at least have something to do. Like umm ... being able to get out, or something like that, so that I can stay in touch with the outside world. Because if I just stay inside doing nothing exciting, life will get too stressful.” (Interviewee 6: unemployed-male-paraplegia)

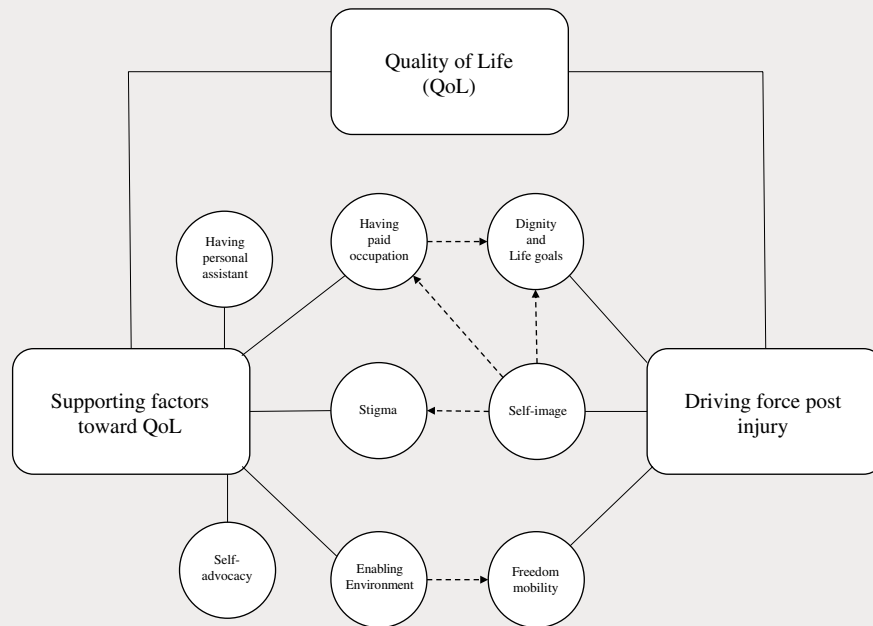
They all assumed that a stable income from a paid job would positively influence their level of independence so that they would be able to be self-reliant when money was needed for health care costs, assistive equipment, and services such as a PA. The respondents wanted to be less dependent on family and government support, and they stated that having a job was desirable not only for the financial stability it offered but also for its attendant self-esteem which they felt also led to a significant reduction in the anxiety suffered by their family members.

Having PA: A PA in this investigation was defined as a person who stayed close to the participant to help them with self-care, work, and activities of daily living in order to ensure that they could live independently and develop self-determination and control over their own lives. A PA could be either someone that the participant hired

Table 3. Mean (SD) scores in eight domains of SF-36 Thai normative data compared with SF-36v2 SCI data.

Domains	Lower scores indicate	Male				Female					
		SF-36 Thai normative N = 436	SF-36v2 SCI N = 80	t	p	ES	SF-36 Thai normative N = 721	SF-36v2 SCI N = 21	t	p	ES
Physical functioning	Limitations in physical activities	72.98 (20.84)	37.38 (21.21)	14.01	0.0001*	2.54	72.25 (21.25)	38.33 (25.21)	7.17	0.0001*	4.73
Role physical	Problems with daily activities/work due to physical health	79.59 (28.40)	58.36 (29.59)	6.11	0.0001*	3.48	83.74 (26.11)	65.48 (29.62)	2.29	0.0220*	7.96
Bodily pain	Limiting pain	68.29 (18.84)	55.75 (25.95)	5.13	0.0001*	2.44	72.42 (18.59)	66.29 (24.94)	1.47	0.1410	4.16
General health	Feelings of unsatisfying in health, likely to get worse	63.11 (16.12)	55.70 (21.00)	3.59	0.0004*	2.06	63.72 (17.30)	59.81 (19.60)	1.02	0.3095	3.84
Vitality	Feelings of fatigue	64.06 (13.94)	66.09 (12.61)	1.21	0.2252	1.67	63.17 (13.83)	66.67 (17.49)	1.13	0.2571	3.09
Social functioning	Interference with normal social activities due to physical/emotional problems	70.53 (19.61)	74.22 (21.08)	1.53	0.1269	2.41	65.68 (19.76)	82.74 (18.32)	3.91	0.0001*	4.37
Role emotional	Problems with daily activities/work due to emotional problems	73.47 (33.63)	72.81 (27.46)	0.17	0.8685	3.98	78.32 (32.02)	82.54 (21.07)	0.60	0.5487	7.03
Mental health	Feelings of nervousness and depression	70.47 (14.72)	69.69 (12.92)	0.44	0.6575	1.76	71.06 (14.35)	66.43 (19.57)	1.44	0.1501	3.21

Notes: *The mean scores are significantly different between SF-36 Thai normative and SF-36v2 SCI ($p < 0.05$).



Note: Straight line = having connection/relationship between themes and sub-themes; Arrowhead = one having an influence on others.

Fig. 2. Visual representation of the themes and sub-themes of HRQoL in individuals with SCI.

or a family member. A PA had a greater effect on the QoL of persons with quadriplegia than on those with paraplegia. All participants with quadriplegia in this interview hired a live-in PA; for them, a PA was the most important factor in their life after injury.

“Let’s say if my arm was alright, it seems to me that my life would not be problematic, but I cannot help myself, and I have to wait for others to aid me. I need a personal assistant.” (Interviewee 2: employed-male-quadruplegia)

Participants with paraplegia (most of whom were living in either rehabilitation centers or boarding schools for the disabled), required assistance from family members only when they were at home. This is because their homes were not modified for people with disabilities and some of them said their family requested them not to do anything and kept telling them that if they did want to do something, the family would do it for them.

Enabling Environment: The sub-theme of enabling environment refers to the physical accessibility or inaccessibility of the home, work, public transport or leisure facilities and its consequences for QoL. All participants reported that they could not overcome commuting problems. Lack of accessibility to facilities in Bangkok (and almost everywhere in Thailand), for example, the abundance of inaccessible locations, limited or unsupported transportation and geographical distance were

found to be insuperable obstacles. Some participants encountered rejection from their family or landlord when the idea of environmental adjustment was proposed.

“Right now I’m renting a house, and I asked the house owner for permission to build a new restroom door, but he didn’t allow it. The door right now is too small; the wheelchair cannot enter, and that makes me feel uncomfortable, and I don’t want to stay there. The problem is that my mom and relatives don’t want to move out, and I cannot walk. I can’t do anything about it, so I have to live with this hardship.” (Interviewee 6: unemployed-male-paraplegia)

All participants who were living in rehabilitation centers or boarding schools for the disabled felt that it was more convenient to stay in institutions for people with disability. They could be totally independent there because the environment was adapted to serve people with a movement disorder.

Stigma: The term *stigma* in this context means the attitude that the individuals with SCI think other people have toward them as people with disability. The presence of stigma makes them feel inferior, incompetent and inadequate, and all respondents said that this had a negative influence on their QoL.

“They still consider people with disability as those who are unable to help themselves, worthless

individuals who must be taken care of all the time, or even burdens. Yes, burdens on society. Like, why do they come outside? I was once at a walking street at Chiangmai. I saw some pedestrians glancing at me, as if to say, why on earth do you come out, why don't you just stay at home? Something like that." (Interviewee 4: employed-female-quadruplegia)

Self-advocacy: The term *self-advocacy* in this study means knowledge of yourself, knowing what you need and how to get it. It also includes learning about self-determination and making your own decisions in life. Participants stated that self-advocacy was the foundation for taking self-determined actions which gave them the ability to gain self-awareness and understand their own strengths, weaknesses, interests, preferences, and needs. They stated that self-advocacy was the knowledge and skill contributing to a good life after SCI. The participants said that they initially developed their self-advocacy by seeking information about self-care from disabled peers, health care professionals, and social internet networks.

"My level of disability is severe. I can't help myself. Everyone has bedsores and I am no exception. At first, I didn't realize and had no knowledge of it. They (bedsores) caused me a lot of problems, and it was difficult to recover. I asked for advice from other disabled friends, but would you believe that five people gave me five different pieces of advice? I was wondering what on earth was happening to me?" (Interviewee 1: employed-female-quadruplegia)

Driving Force Post Injury: Driving force post injury in this context refers to the individuals' motivation based on their personal circumstances and particular vision of how things could be. It emerged after the participants accepted another form of self after their injury. The interviews revealed three motive themes that affected the QoL of persons with SCI in this study: self-image, freedom mobility, and dignity and life goals.

Self-image: The participants stated that their health, disabilities, and financial situations made it difficult to maintain a positive self-image and self-esteem. However, they embraced the fact that self-image and self-esteem are important for their well-being and QoL because feeling good about themselves can positively affect other aspects of life and other people around them. All participants said that they want to be seen as positively capable persons.

"Let's say I like dressing up. If I only dress up in my house, then what's the point? No one sees me. And it's like when other people talk to me, and they say that I look gorgeous. No one says that I'm fat, not even one. Only gorgeous, right? I can be a beauty in the wheelchair." (Interviewee 1: employed-female-quadruplegia)

All employed participants stated that self-image and self-esteem followed after they acquired confidence from being independent. They perceived the positive reactions of other people, and they admitted that they became more open-minded, communicative and outgoing.

Freedom Mobility: All participants referred to the term freedom mobility as the provision of a wheelchair and commuting accessibility. They wanted to boost their independent mobility in order to maintain an active and satisfying lifestyle. They said that mobility and movement were important for QoL because they widened their life experiences, opportunities, and social connections.

"If I could go out alone, completely without a PA. Wooh, how cool that's gonna be!" (Interviewee 1: employed-female-quadruplegia)

Dignity and Life Goals: The employed respondents said that after overcoming many adversities, they defined themselves more around their self-worth than around their areas of vulnerability. They also reported that being part of something important helped them feel good about life and have fewer concerns about their daily struggles. All participants set their life's goal as wanting to live and use their best abilities to benefit those who were important to them (their parents) or those who were in need of help (disabled peers).

"I earn my own living. I don't rely on my parents. Every baht comes from my own labor. By 'labor', I don't mean that I do it all by myself because my fingers are disabled; I could manage to do that with the help of my assistant. The important thing is that I can take care of my mother sometimes. Maybe not everything because mom... Ah, by taking care of her, I mean taking her out for dinner, or buying her what she wants." (Interviewee 1: employed-female-quadruplegia)

Discussion

To our knowledge, the present large study is the first one aimed at assessing HRQoL in individuals with SCI in Thailand using mixed-methods

sequential explanatory design. This study evaluated QoL in individuals with SCI living in Bangkok, Thailand, and compared the SF-36v2 scores of SCI sub-groups and with those from SF-36 Thai normative data. This was possible because of the availability of data on participants' characteristics and socio-environmental variables. However, the study was unable to provide some information regarding important aspects to match with the comparison groups. Therefore, comparisons with Thai SCI and other groups must be made with caution. The comparisons provide general perspectives on QoL after SCI.

The qualitative data of this study found QoL themes similar to the previous study²⁶; however, it provided some unique details that had not appeared elsewhere because of the different socio-cultural structure and psychological perspective of Thais. Also, it provided sufficient supportive in-depth explanations to the quantitative findings.

Integration of the Data

The connection of the data was discussed in this section. Each aspect of the quantitative data was discussed with regard to literature and some qualitative data (themes) were added to provide an in-depth understanding of "how" and "why" they rated their QoL in that way.

The gender difference was found to have an effect on QoL after SCI. In our study, women recorded higher scores than men in every SF-36v2 sub-scale with the exception of MH (no significant difference was found in this domain). The possible explanation for the lower score in MH in women with SCI could be that they tend to suffer from psychiatric ill health more than their male counterparts.³⁰ However, the higher scores attained by females in the various SF-36v2 subscales are in sharp contrast with the results of other studies which found that women with SCI had more medical, social, and psychological problems than men.^{1,31}

With regard to participants' age at interview, this study reported higher scores in RP, BP, GH and SF in younger patients. Overall, the participants in this study were relatively young with mean and median ages of 34.56 and 34 years, respectively. This result is similar to the findings of the study by Arango-Lasprilla *et al.*³² but lower than in other previous research in which the mean

age of participants was greater than 40 years.^{1,33–35} Younger age is related to superior levels of energy and activeness, and this may be conducive to more physical activity and adaptability to change.³⁶

In this study, younger age at injury had a positive impact on QoL. This is because, in general, those who are younger have a superior capability to cope with injury, especially those whose age at injury is under 35.³⁷ Another explanation is that younger people are not aware of the likely deterioration in their health as they age, and their body and mindset require less medical and social support.¹

Regarding the time since injury, this study found better QoL in some domains (GH, VT, and RE) in individuals with shorter duration of disability. This finding is similar to those of the study by Elfstrom *et al.*³⁸ but different from those of the studies of Krause³⁹ and Westgren and Levi¹ which reported that QoL improves with longer time since injury. Another study found no difference in QoL associated with time since injury for individuals with paraplegia.⁴⁰

The quantitative findings revealed that women with SCI or those who are younger or having lesser time since injury had higher QoL scores than men, older participants or those with longer time since injury. The qualitative investigation could capture reasons behind these notions that PA have a huge influence on their QoL. As a younger and unmarried member of the family, they were still living with their parent (or with PA hired by their parent). They got all supports and cares from their PA or older family members (especially in women). This is also true for persons with quadriplegia that they have to rely on other people. A PA is essential for attaining QoL in high individuals with SCI. This research found that persons with quadriplegia redefined themselves as "able" and no longer viewed themselves as "disabled" when they were able to use their PA to help them regain control over their everyday life.⁴¹ The relevant theme of "having PA" has not been considered in previous research. The emergence of this theme in the present study may be due to the noteworthy constraints of environmental factors both in the household and in public facilities.

Where "having PA" involved a parent or close family member, overprotectiveness was identified. The closeness of family relationships in Thai culture and the attendant overprotective caring tend to turn individuals with SCI who live with their

family into passive individuals. This is because of a misconception about independent living and physical activity of persons with disability.⁴² They believe that a person with SCI should do less activity to reduce the occurrence of accidents and prevent deterioration in their health, and this is probably a result of their ignorance about health promotion for people with disability. However, it also means that they get constant emotional and psychological support from persons around them.

Moreover, the QoL scores were expected to be lower in those with SCI than in the able-bodied persons.^{2,12,33–35,43} However, our study yielded an unexpected result that individuals with SCI had higher QoL scores on VT, SF (both men and women), and RM (only in women) than Thai normative data (Table 3). The qualitative investigation of this study suggested that these higher scores in psycho-social variables in Thais with SCI may be accounted for by differences in social roles and family traditions: the strong family relationship and community values which prevail among Thais means that individuals are offered strong emotional support and assistance. The superior Thai family and community relationships can act as a protective factor against depression and other emotional problems.

Employment has been proven to be a factor that influences a better QoL score.^{26,44–47} This aspect is strongly related to age and economic and social opportunity. The Thai welfare system and Thai-disabled benefits are relatively low, and it was apparent in the qualitative interviews that unemployed individuals had a poor standard of living. Consequently, the term “having paid occupation” is used to represent the socio-cultural value of work in the Thai cultural context. The qualitative investigation of this study confirmed that employment affords an opportunity for individuals with SCI to gain social, psychological, and tangible values from working which raise their life satisfaction levels above those of the unemployed ones.⁴⁸ The Thai Department of Empowerment of Persons with Disability has implemented legislation in the Rehabilitation of Disabled Persons Act that encourages business owners and public agencies to employ persons with disability. Even though this legislation is in force, the rate of people with disability who are employed has not significantly increased. According to the qualitative findings, there are three explanations for this: first, the business sectors may not be aware of the

legislation; second, the business sectors might consider the cost of adjusting the workplace to people with disability as too high, and finally, the shortage of finances and transportation for the disabled prevents them from getting to the workplace, resulting in their rejecting job offers.

One essential factor that needs to be addressed are disability benefits and social policies. The reason most Thai persons with SCI desperately try to get a paid occupation is because disability benefits in Thailand are so low that it is impossible to survive financially on them; therefore, further income is essential. This regulation is in contrast with healthcare support in countries in the Scandinavian region where persons with SCI get financial support for housing, workplace, car adaptation, assistive devices, medical care and subsidized medication.¹ In Thailand, different causes of SCI lead to diverse levels of disability compensation. For example, a person with SCI from work-related injuries will receive only workmen’s compensation from Social security office^{49,50} whereas someone with SCI from a car accident will receive additional support from the Department of Land Transport for assistive devices.⁵¹ This suggests that QoL of Thai individuals with SCI may differ according to the cause of their injury. However, further research is needed to confirm this notion.

Many respondents commented that environmental factors were outside their control and had a significant impact on their participation in physical activity and on their QoL.^{52,53} Recognizing this apparently insuperable problem helped us to gain a full appreciation of the situation faced by people with SCI in Thailand. Environmental factors are major predictors of life satisfaction that include, but are not limited to, the natural environment, transportation, support at home, healthcare, and government policies.⁵³ Several positive developments have been made in urban areas, especially in newly established hospitals, shopping malls, and hotels, which have been adapted to accept the important role of the environment in the lives of people with disability; however, these developments are practically unused by the persons with disability, and the qualitative finding provided several reasons for the same. First, these facilities are based on exclusive and limited areas while most people with disability are living in rural areas or some distance from the city center. Second, poor public awareness of the needs of people with disability and general lack of facilities for the disabled

make those amenities inaccessible for people with disability. Both these reasons reflect the lack of concern of able-bodied people for people with disability and the fact that these positive developments do not cover the area where the majority of persons with the disability live.

As for the residential aspect, scores varied among sub-groups and this made generalization difficult. The majority of individuals with SCI were living in their own home with a PA (39.60%) or in a disabled institute without a PA (51.49%). As people who are eligible to live in a disabled institute must be autonomous wheelchair users, they should have higher scores regarding their severity of injury. The relatively low score presented in this study may have been because of the timing of the survey, which was during the first month of their enrollment into the disabled institute at which point they were just adapting to their new environment. However, the qualitative interview suggested that they were more independent while living in a disabled institute than in their own home because the facilities and environment were well designed for persons with disability. According to the qualitative data, lack of control over environmental factors also includes household adjustment, especially for those who are living in rented houses or apartments, as they cannot add to or readjust the solid construction of the building due to their property rental agreement. This results in an environmental barrier within their own household which tremendously restricts physical activity in their lifestyle.⁵³⁻⁵⁵

The Standalone Discussion of the Qualitative Data

This section discuss on the themes that have not related, connected or added meaning to the quantitative findings.

One QoL theme that is found in persons with disability but not in able-bodied persons is “stigma”.²⁶ The results of the present study highlight the vulnerability of the population with SCI to emotional disorders which have crossover effects on emotional well-being, relationships and socialization.^{26,41,56} It has been suggested that cultural norms, ideas of competence, social worth and individuals’ sense of self had an influence on stigma. Furthermore, the disappearance of stigma is also related to how well they adjust to the sudden

onset of impairment, and their ability to redefine their values.^{8,47,56,57} Additionally, the qualitative investigation in our study revealed that the interviewees had a singular perception that the majority of non-disabled persons held a negative attitude toward people with disability. This may be due to the belief of non-disabled persons that the term “disabled” is synonymous with “incapable of doing things”. Further studies should be conducted regarding non-disabled persons’ perceptions of persons with disability in Thailand.

The participants used the term self-advocacy to describe their active behaviors and actions in seeking help from other persons as well as promoting their health status. This theme is similar to others found in the previous research, with the “health behaviors” and “physical well-being”, that refer to the actions that the persons with SCI do to enhance their health, employment, accommodation, or to be part of recreational activity.^{26,38} However, the participants stated that “self-advocacy” came during and after the period of acceptance of their disability. They started to realize which things were essential for their survival and how they could acquire them through the various sources of information and help available. This was aligned with the conceptual framework of self-advocacy involving self-knowledge, knowledge of rights, communication, and being autonomous and competent, all of which are important in the process of internalization and incorporation of health behaviors.⁵⁸ The presence of “self-advocacy” could imply that they valued and prioritized active behaviors in exploring different methods of achieving their needs and expectations and adopted these behaviors in their lifestyle.

Moreover, our study revealed that Thai individuals with SCI adore their healthcare professionals. However, just as in other studies, healthcare professionals often focused more on reducing disabilities, minimizing handicaps, instructing mobility techniques and improving activities of daily living without paying attention to the long-term and extensive health needs of their charges.⁵⁹⁻⁶¹ Lack of support and recommendation from healthcare staff about life after injury may have a direct and detrimental effect on QoL in persons with SCI. Therefore, it is recommended that healthcare professionals should revise their role to facilitate, help and prepare individuals with disability to adjust their attitude and behavior to adapt to their new circumstances.^{55,59-61}

After accepting the new form of self as a person with disability and gaining confidence in being autonomous, many Thai individuals with SCI have developed the motivation to live a better life. The first motive theme is “self-image”. The new image of self in this context was defined by the interviewees as the replacement of undesirable historical self-image with an optimistic one of their own creation. Persons with SCI purposively develop their self-image internally and externally to expand their experience, opportunity, and self-esteem because they want to be seen as capable people. This issue has been mentioned by many studies in the field of SCI^{8,26,46,53,55–59,62} and has a strong relationship with the most conspicuous theme of “having paid occupation” insofar as SCI individuals try to improve themselves in order to increase their chances of being employed.^{46,52,53,58,62,63}

The second motive theme is “freedom mobility”. This theme was proposed as an ideal but not as reality. Participants with SCI want to experience control over their own mobility and transportation with minimal or no support. This study found a relationship between this theme and “enabling environment” as it appeared in the previous studies.^{36,52–55,59} Certainly, Thai participants with SCI could not achieve “freedom mobility” because environmental factors are not well suited to persons with disability: only the persons with disability who have a reasonable family business background and financial stability can afford to overcome this factor by owning an adaptive mobility car for people with disability.⁵³

The last motive theme is “dignity and life’s goal”. Being confident and wanting to do something meaningful in their life showed that individuals with SCI valued their ability rather than their disability.⁶⁴ Having less concern for their vulnerability and daily struggle means that they can meet Thai cultural expectations and achieve desirable feedback from family members and peers. In Thai culture, people value and admire persons who provide care and support for their parents; being able to take care of their parents makes them feel great pride in being Thais.^{65–69} Moreover, individuals with SCI put a great value on becoming role models to help and share their attitudes, experience, and knowledge with other people with disability. Being generous to other individuals with disability helps them strengthen their ability and self-worth.⁵³ Thus, it could be implied that acquiring a sense of being

valuable has a positive impact on the QoL of people with SCI.

Limitations

This study had several limitations, and its results should be interpreted with caution. First, these Thai participants with SCI were recruited from an urban area of Bangkok, and therefore, the findings should not be generalized to apply to those living in rural areas where there may be fewer resources for persons with disabilities. Second, the present study used a cross-sectional research model; thus, it was unable to explain changes in QoL over time. Third, sample size calculation could not be performed to estimate the number of participants that reached the significant power level. Consequently, this study may not have included an adequate number of subjects to enable generalization of the results to the whole population with SCI in Bangkok, Thailand. This is due to the lack of epidemiology, prevalence and incidence research carried out in investigating the populations with SCI in Thailand. Finally, the use of SF-36v2 in this study may pose a problem when utilized with persons who use a wheelchair because some SF-36v2 questions refer to walking and climbing stairs. Further research should therefore consider either modifying some questions in the SF-36v2 to increase its sensitivity for use with wheelchair users or using some other data collection instruments.

Conclusion

In conclusion, this study achieved its aim of using subjective and objective measures to explore QoL in Thai persons with SCI. The relatively high scores on SF-36v2 (except in the physical functioning domain) could be explained by the replies in the qualitative investigation about QoL themes of Thai individuals with SCI which were similar to those of other studies but had their own uniqueness in that they specifically describe Thai socio-environmental-cultural aspects. The results of this study may provide a basis for the improvement and implementation of programs for individuals with SCI in order to enhance their QoL.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Author Contributions

AF is the leading researcher. AF and AE contributed to the conception and design of the study. AE contributed to the writing of a research proposal, submitted for ethical consideration, collected both quantitative and qualitative data, extracted and transcribed the data, performed the data analysis, and prepared the manuscript for submission to the journal. JK contributed to the development of the

qualitative investigation and analysis. MM is contributed to the recruitment of subjects. All authors revised and approved the final submitted version of the manuscript.

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Appendix A. Characteristics of the SCI Individuals Who Participated in the Semi-Structural Interview

Interviewee number	Sex	Time since		Type of injury	Employment	Resident	Cause of injury
		Age (year)	injury (year)				
1	Female	46	26	Quadriplegia	Employed	Home with PA	Car accident
2	Male	25	5	Quadriplegia	Employed	Home with PA	Gunshot
3	Female	42	16	Quadriplegia	Employed	Home with PA	Car accident
4	Female	45	11	Quadriplegia	Employed	Home with PA	Motorcycle accident
5	Male	25	7	Paraplegia	Employed	Home without PA	Car accident
6	Male	32	5	Paraplegia	Unemployed	Disabled institute without PA	Falling from height (work related)
7	Male	40	3	Paraplegia	Unemployed	Disabled institute without PA	Motorcycle accident
8	Male	20	3	Paraplegia	Unemployed	Disabled institute without PA	Gunshot
9	Male	30	3	Paraplegia	Unemployed	Disabled institute without PA	Car accident
10	Male	26	3	Paraplegia	Unemployed	Disabled institute without PA	Motorcycle accident
11	Male	32	14	Paraplegia	Unemployed	Disabled institute without PA	Motorcycle accident

Appendix B. Description of the Thematic Analysis Process by Braun and Clark²⁸

Phase	Description
(1) Familiarization with the transcribed data	Reading and re-reading the transcribed data, taking notes, and making an idea for coding.
(2) Coding all relevant data	Producing the initial codes from the data that appear to be interesting to the analyst.
(3) Generating potential themes from codes	Sorting different codes into potential themes and collecting all the relevant coded data extracts within the identified themes.
(4) Making a thematic map	Reviewing the coded data extracts (level 1), refining the themes that reflect the meanings evident in the data set and creating the thematic map.

(Continued)

Phase	Description
(5) Defining the themes	Ongoing analysis to refine the scopes of each theme, and the overall story the analysis tells, creating clear definitions and names for each theme.
(6) Names and producing a scholarly report	Producing the scholarly report of the analysis that contains concise, coherent, logical, non-repetitive and interesting account of the story the data tell within and across the themes.

Appendix C. Data Extraction of the Qualitative Findings Using Thematic Analysis

Extracted transcribed data	Codes	Sub-themes	Themes
<i>"I must be responsible for myself. . . I must stand on my own feet in everything. I must sustain myself without any help from others."</i> (Interviewee 5)	Being financially independence	Having paid occupation	Supporting factors toward QoL
<i>"I would like to have some work, or at least have something to do. . . Because if I just stay inside doing nothing exciting, life will get too stressful."</i> (Interviewee 6)	Having something to do		
<i>"Because I am in the school, because of knowing that life is for learning and because I get to work after I graduate. But one day, I believe I will get a good job."</i> (Interviewee 8)	Expectation on future career		
<i>"I need a job. My life is going to be so great if I could get a job."</i> (Interviewee 11)	Needing a job		
<i>"Let's say if my arm was alright, it seems to me that my life would not be problematic, but I cannot help myself, and I have to wait for others to aid me. I need a personal assistant."</i> (Interviewee 2)	Needing aids from other	Having PA	
<i>"Because my case is serious and I cannot help myself at all. I must hire a personal assistant."</i> (Interviewee 3)	Needing aids from other		
<i>"Well. . . my mother and my brother told me that I don't have to do that; they will take me there."</i> (Interviewee 6)	Overprotective parent		
<i>"I am only able to stay like a useless man. I must wait for others to help me. When I try to go down (the stairs), I feel afraid because the stairway is high. . . I have to wait for others to do things for me."</i> (Interviewee 7)	Overprotective parent		
<i>"In my neighborhood, there aren't any slopes. They might be looked over that I need to use them. Or maybe I am the only disabled person in the village, that's why they don't pay attention to me."</i> (Interviewee 2)	Outdoor obstacles	Enabling environment	
<i>"I can't use public transport so I have to take a taxi, sometimes they let me in, sometimes they don't, or let me in then let me out later, or scold me. Some were upset at me as my wheelchair scratched their car."</i> (Interviewee 3)	Transportation obstacles		
<i>"Right now I'm renting a house, and I asked the house owner for permission to build a new restroom door, but he didn't allow it. . . I can't do anything about it, so I have to live with this hardship."</i> (Interviewee 6)	Indoor obstacles		
<i>"My house has no facilities to assist people with disabilities. They are expensive. My house was just bought but I'm already at the school and everything is ready for people with disabilities."</i> (Interviewee 11)	Indoor obstacles, preferring school		
<i>"Not to mention others; even my family members don't accept me."</i> (Interviewee 1)	Acceptance from others	Stigma	

(Continued)

Extracted transcribed data	Codes	Sub-themes	Themes
“They still consider people with disability as those who are unable to help themselves, worthless individuals who must be taken care of all the time, or even burdens. . . Like, why do they come outside” (Interviewee 4)	Views from others		
“Ah, to be honest, it is 80% of people who judge the people with disabilities as burdens of society. Ah. . . (people with disabilities) always have this and that. (Interviewee 5)	Views from others		
“There are a lot of kiosks on the sidewalk. When I wheeled through them and ask to pass, they scold at me.” (Interviewee 6)	Actions from others		
“Bedsore caused me a lot of problems. . . I asked for advice from other disabled friends, but would you believe that five people gave me five different pieces of advice? (Interviewee 1)	Seeking advice	Self-advocacy	
“Searching on the Internet by myself, kinda like that. I can’t move like healthy people, and need to look after our body. . . So that I can live my life normally.” (Interviewee 2)	Taking actions for the better		
“They said moving any parts of my body counts as exercise; therefore I moved my head. I used to be so fat that I fully filled the bed. . . Turned out I got slimmer.” (Interviewee 4)	Taking actions for the better		
“Practicing by myself. The doctor never suggests anything. (I have to) learn by myself.” (Interviewee 8)	Taking actions for the better		
“Let’s say I like dressing up. If I only dress up in my house, then what’s the point? No one sees me. And it’s like when other people talk to me, and they say that I look gorgeous.” (Interviewee 1)	Feeling good about themselves	Self-image	Driving force post injury
“My friend who had been studying with me didn’t know about my accident (talking on the phone). My voice did sound fine. So I told them, “yup, if I don’t tell them I’m disabled, no one knows.” (Interviewee 3)	Feeling good about themselves		
“After I moved out from my parents house, I feel more confident. I see myself as an independent person. Hanging out with my (disabled) friends makes me feel alive.” (Interviewee 8)	Feeling good about themselves		
“I started to exercise and build up my muscle. I dress well and be confident. I feel great about myself and that affect the way how others feel about me as well” (Interviewee 10)	Feeling good about themselves		
“If I could go out alone, completely without a personal assistant. Wooh, how cool that’s gonna be!” (Interviewee 1)	Independent mobility	Freedom mobility	
“I’m already a Bangkokian, so it’s not hard traveling around. Especially right now when I already own a car, I can drive to anywhere by myself.” (Interviewee 5)	Commuting accessibility		
“But when I go out, it’s troublesome. Sometimes a fierce dog at the house I have to pass by ran after me, and that’s the problem. . . they bit me, leaving a bad wound.” (Interviewee 7)	Commuting inaccessibility		
“Every time I decide to go out, I must at least asking for help about 10 times on the way to and from my home” (Interviewee 9)	Commuting inaccessibility		
“The important thing is that I can take care of my mother sometimes. Maybe not everything because of mom. . . Ah, by taking care of her, I mean taking her out for dinner, or buying her what she wants.” (Interviewee 1)	Taking care of parent	Dignity and life goal	
“Actually, when I have started working, I did help other disabled people. And I feel so, so great. . . Maybe, ah, being disabled is good as having a chance to help other disabled.” (Interviewee 4)	Taking care of others		
“I will go back home and make my parents proud of me. I will be the leader who helps poor and disabled people in my city.” (Interviewee 9)	Taking care of others		
“I dedicate my life to my beloved son. After I graduate from this school, I will work hard and send him to study in a good place. He is my everything and I will do everything for him. I will not let him down” (Interviewee 10)	Taking care of children		

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